UNITED STATES OF AMERICA

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FEDERAL COMMUNICATIONS COMMISSION

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PROPOSED COMCAST-TIME WARNER CABLE-
CHARTER TRANSACTION

ECONOMIC ANALYSIS WORKSHOP

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FRIDAY
JANUARY 30, 2015

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The Economic Analysis Workshop met in the Federal Communications Commission, Commission Meeting Room, 445 12th Street SW, Washington, D.C., at 9:15 a.m., William Rogerson, Paul LaFontaine, and Shane Greenstein, FCC Moderators, presiding.

FCC MODERATORS

SHANE GREENSTEIN
PAUL LAFONTAINE
ERIC RALPH
WILLIAM ROGERSON
DAVID WATERMAN
ANDREW WISE

APPLICANT ECONOMISTS

DENNIS CARLTON
MARK ISRAEL
GREG ROSSTON
MICHAEL TOPPER

THIRD PARTY ECONOMISTS

GARY BIGLAISER
DAVID EVANS
JOSEPH FARRELL
JOHN KWOKA
DAVID SAPPINGTON
RICHARD SCHMALENSEE
WILLIAM ZARAKAS

C O N T E N T S

P-R-O-C-E-E-D-I-N-G-S

9:15 a.m.

DR. ROGERSON: Well, I'd like to welcome everyone here this morning. And thank everyone for coming. Before we start, I'd like to thank all of the FCC staff that worked very hard to organize this and get this all together.

And of course the crack staff that worked on the questioning and stuff. You're going to see a lot of them. So thank you to all the FCC staff that did all the organizing for the panel.

I have a few small announcements to make. No recording of any kind is allowed during the sessions. And everyone in this room is cleared to hear highly confidential information. But you should remember that highly confidential information will be shared within this room. And then it has to be treated as highly confidential information.

If you leave the room you're going to get interrogated on the way back in. Because you're only allowed in this room if you were invited. And so be aware that you should -- I don't know what that means.

(Laughter)

DR. ROGERSON: But I was told to tell you that. I was also told to tell you we have bathrooms. They're off in that direction. Let's see, what else?

Oh yes, there will be a lunch break. It's only an hour and a quarter. So probably you're better off just having lunch at the FCC cafeteria because probably everyone in this room knows how long it takes to get through FCC security. Me too. So you may decide to have lunch there.

One last thing, I want to thank all of the economists from both sides of the issue for coming today. Many of them submitted questions to us in advance. We used some of them, we didn't use some of them. But thank you very much for submitting questions in advance.

As well, people in the audience, we have some FCC staff -- yes, there. Okay, well we have at least one FCC staff. If you raise your hand, they have cards and you could write a question on a card. It will be brought up front and I may ask it. Okay, I guess it's up to me.

One last thing, that probably we -- any one of these questions we could spend a half hour on. And we've got 15 or 20 topics we want to go through at each of these sessions. So occasionally I may end up having to be a little rude and hurrying people along. But it's really just in the goal of making sure we have time to discuss all of the topics.

So, please panelists, try and keep your answers short and succinct. And I'll help you if I feel I need to. Okay.

So, without further ado, let me introduce the -- oh.

COURT REPORTER: Can I ask one thing now. Can you make sure that when you do speak that the microphone is right in front of you.

DR. ROGERSON: Okay. And I guess that means me too. Be close to the microphone when you're talking please. Good.

Okay, so without further ado, the FCC panel of moderators that are helping me moderate the first panel are Paul LaFontaine and Shane Greenstein. From the Applicants we have Dennis Carlton and Mark Israel. And then from third parties commenting on the proceeding, we have David Evans, Joseph Farrell, David Sappington and William Zarakas.

So, without further ado, let’s start with Session I, which is on interconnection. So, I want to begin just for clarity by stating what I believe is the central theory of harm we're going to discuss.

So when I say this theory of harm that doesn't mean that I think it's true or I think it's false. I just think we should understand what we're talking about.

Okay, so the theory of harm that I believe we're discussing in this panel is that by providing access to a larger share of the nation's broadband subscribers, post-transaction Comcast will be better able to charge higher interconnection fees to OVDs and other edge providers either by directly charging higher interconnection fees to those that directly connect with Comcast, or by charging higher interconnection fees to CDNs and ISPs that provide this interconnection.

Although this is a very simple theory to state, it turns out that there's a number of distinctly different, very complex issues that arise when you try and check out if this theory has any validity in the context of this merger. What we propose to do in this panel is go over a large number of these most important points one at a time.

So the point I want to start with is, this theory of harm clearly requires some for it to be valid, would require that if Comcast were to deny access to an OVD or a content provider, or degrade access to it, Comcast would have to retain a significant number of its customers. If they all left it wouldn't be able to engage in this type of action and then negotiate higher prices.

So there has to be some reason why the subscribers won't leave. Or are unlikely to leave.

Commenters have suggested that they might not leave if they don't have good substitutes. And they might not leave if their switching costs are high.

These are in some sense just theoretical speculations. Commenters have provided three different pieces of evidence and the Applicants trying to support you know, their view on this. And I'd like to go through the three pieces of evidence one at a time.

So the first piece of evidence, Dr. Israel has reported that fully **{{ }}** of Comcast's customers churn away over a year. And he interprets this **{{ }}** churn rate as suggesting that consumers must have broadband options and possibly that switching costs are generally low.

So I'd like to start by asking Dr. Israel if I got it right, and if you'd like to elaborate at all. And then I'm going to ask Dr. Evans to comment.

DR. ISRAEL: I think you got right the idea that I look at the churn rate. I mean I think I look at it for one specific issue, which is whether we should think there are very high switching costs and those switching costs would prevent people from leaving the firm.

(Phone ring tone heard in background)

So the way I think about the churn rate is it's not as much the number who actually leave the firm at any given -- or a firm at any given month or year, it's the sort of, are people locked in, or are there opportunities for people to leave the firm? Right.

And so there's been some discussion about you know, people who move or what kind of churn you're looking at. And basically the way I think about it is, if somebody actually leaves the firm and chooses to go to another firm, obviously they weren't constrained by switching costs.

But it's also -- the switching costs as I understand them, are generally that you live at a certain place, you already have the service there. It would be difficult to switch. Whereas if you move to a new location, at that point you have to get new service at your house in any case. So I would argue that the switching costs in that case are quite limited.

So the way I think about it, what you get is in the course of a year, roughly **{{ }}** of people leave the firm -- and that could be because they choose to leave or they just don't pay their bills and therefore have to go to a different firm or move to a new address, in which case I would argue the switching costs are broken.

So the point I'm making with churn is simply that over the course of a year, at least **{{ }}** of the people -- presumably more, because some people who stay home and don't switch -- still have you know, low switching costs. But at least **{{ }}** of people have shown that the switching costs are not particularly high.

DR. ROGERSON: Okay. Dr. Evans?

DR. EVANS: Well first of all, do I get musical accompaniment during my presentation?

(Laughter)

DR. ROGERSON: I'll begin to hum gently if it doesn't turn on, okay?

DR. EVANS: So we've obviously submitted something on this. I think what the churn data show, the data that Comcast has submitted, I think once you remove the people that are churning because they haven't paid their bills and it's not voluntary movers and so forth.

The churn rate that we get is somewhere in the -- about the **{{ }}** percent range. That number seems to be consistent with other evidence.

So it's **{{ }}** with the FCC report from 2010, which is around a little bit more than 11 percent. But when you take the fact that the Comcast number is Comcast customers switching to something else, which is probably DSL, if you take into account that for the FCC study, it's everyone; a lot of those switchers are people moving from DSL to something better.

So I think that number is **{{ }}** with what we're seeing for Comcast, which is something like **{{ }}** percent. Also **{{ }}** with the survey numbers that Dr. Israel submitted, which I believe if my memory serves me right, gave an annual churn rate of about **{{ }}**. But again, that was general and includes people moving from DSL to cable.

So I think the churn data at this point in the record point to something that is well below **{{ }}**. Now that makes sense, because if you actually look at what people can switch to, most people don't have a very good choice. You know, something we've already submitted on,

close to **{{ }}** percent of the people, maybe it's about **{{ }}** percent of the people don't have an **{{ }}** alternative to switch to. And then finally I think the **{{ }}** churn data that I think you get correctly from the Comcast data are consistent with what I think we all know, which it is a really, really painful thing to do to switch.

And if I could just leave with one personal anecdote which Dennis will particularly appreciate. I was actually thinking of switching over the Christmas holidays for reasons I don't want to get into.

But when I called Comcast and I asked about switching, they told me -- I asked about it, they told me I had to return my cable box. And they told me that in Boston, Dennis, I had to return it to a place either in Roxbury or the -- or in East Boston. And for those of us who know Boston, these are not pleasant places to go to.

DR. ROGERSON: So now I'm a little worried I'm going to have to give each of the panelists a humorous personal anecdote for equal time. But you've certainly used yours up.

(Laughter)

DR. EVANS: I didn't get the humming.

DR. ROGERSON: Okay. I'm going to move onto piece of evidence number two. Dr. Israel has submitted another piece of evidence,

a survey that Comcast had conducted by a survey firm for its subscribers. As I understand it, these subscribers said that they would leave at the drop of a hat if their carrier were to degrade access to content providers.

So, maybe I'll switch it up this time.

I'll ask Dr. Evans, first you can comment on what you thought of the survey. And then I'll have Dr. Israel comment on your comment.

DR. EVANS: So, I'm going to be very brief about this.

DR. ROGERSON: Yes.

DR. EVANS: I mean, the notion that **{{ }}** of people would switch their -- would switch from Comcast at a drop of the hat if they got bad service or something. I mean, it's a crazy result. We all know that can't possibly be true.

And we have an experience where service degraded to a large portion of Comcast customers between November and February -- November 2013 and February 2014 as a result of the degradation of Netflix. And there's no evidence **{{ }}**.

So I mean, we've gone through a lot of technical --

DR. ROGERSON: Okay, so I'm going to call you out of bounds a tiny bit. Just -- that's my third piece of evidence and you're stealing my thunder.

DR. EVANS: Okay, sorry.

DR. ROGERSON: Okay. So do you have any more to say on the survey itself?

DR. EVANS: The survey was not very well done. The questions are open ended. They're not the kind of questions that are likely to lead to accurate results.

And I think the result that you see and the answer to that particular question is so implausible that we probably don't need to spend a lot more time on the technical difficulties.

DR. ROGERSON: Okay. Dr. Israel?

DR. ISRAEL: I mean the survey was done by a professional firm that does surveys all the time. But I should say how I interpret the results of the survey.

I mean as economists we all recognize that if there was a market event you could study and you could observe how people behave, you should use that event. There has been and we'll talk about the event next, I know.

But there hasn't, in my view, actually been a long-lasting event where a single ISP degraded the quality of an edge provider. And the purpose of the survey in my view was to ask people how troublesome that would be to them.

And it was specifically designed to have them relate how troublesome that would be to them relative to the speed of their service. So the question basically -- the key question to me was, if you were to lose an edge provider or an OVD, would you be willing to switch to a provider who provided substantially lower speed? Say DSL or wireless even if it was lower speed?

And **{{ }}** of people said yes to that -- which to me is a preference ranking about losing an OVD or losing an edge provider is as or more important to them than speed.

And so what I take from that is we know, and we'll talk about it more I'm sure, that Comcast invests billions of dollars a year in order to maintain high speeds for their service. Right, they're clearly feeling pressure to do that.

So if consumers are indicating their preference for an OVD is at least as high as their preference for high speed, then I would argue that you would -- that Comcast would face similar or more pressure not to degrade an OVD because their -- whether it's churn or consumers not buying as much service or not being as willing to pay -- their preference for having access to those OVDs is at least as large as their preference for speed.

And Comcast clearly feels strong pressure to continue to invest in faster and faster speeds.

DR. ROGERSON: So we're done with the second piece of evidence. Let's move to the third piece.

The third piece of evidence, Professor Sappington and Professor Zarakas have submitted evidence analyzing -- the Commission asked the Applicants for evidence on churn rates of their own subscribers. The third parties analyzed this and determined that during the Netflix congestion incident, **{{**

}} in Comcast's churn rate.

So I'd like one of the two of you, whichever you'd prefer, to briefly summarize what that result was. And then I'll ask Professor Israel to comment on it.

DR. SAPPINGTON: Okay, thank you Bill. I'll start and then turn things over to Bill. I'd just like to qualify the summary of what we found. And it was actually very much to our surprise that not only did we find that there was {{ }} because of the Netflix incident, we actually find {{ }}.

And we're not absolutely sure why that was the case. But we think potentially what happened was that Comcast used this opportunity to up-sell individuals who called to complain about the reduced speed that they received on their Netflix accounts.

So we found not only was there {{ }} to support Comcast's assertion that they will not sabotage OVDs, because doing so would cause them to lose broadband customers. **{{ }}**, we actually found that during that period and soon thereafter, there was actually **{{ }}** of Comcast high speed data customers.

DR. ROGERSON: So Mark, would you like to respond?

DR. ISRAEL: Sure. I mean, generally I'm interpreting that event. Am I free to respond?

DR. ROGERSON: Anyway you want to interpret that.

DR. ISRAEL: All right. So, I'll be brief. I mean the event, as I mean the event, and I'm sure we'll talk more about it. There was a decline in Netflix speed that affected multiple ISPs including Comcast, AT&T and Verizon. And I'm willing to agree with the Commenters that the key competitor for Comcast is the telcos, AT&T and Verizon.

So if I'm thinking about an empirical study and I see Netflix speed declining at multiple providers, it doesn't particularly surprise me that you don't see decline -- a churn out of Comcast when it's happening to multiple providers at the same time. I would think consumers would assume it was a Netflix issue, not a Comcast issue.

And secondly, I would just note that Dr. Evans has put in a study that finds you know, some changes in usage when Netflix speed was lower. But actually finds that exits from Netflix as a result of this event were only on some specifications statistically significant, and in all events, a {{ }}.

So I think bottom line we're seeing that whatever we make of this event, it just wasn't particularly disruptive. And didn't lead to the reactions from consumers on either side.

DR. ROGERSON: So, do either Professor Sappington or Zarakas have a response? As I heard the claim was no -- they had no good alternatives to turn to and that's why they didn't leave.

DR. SAPPINGTON: Well, one question I think we need to think carefully about is how would customers in fact know this? I think it's unlikely that a customer who was dissatisfied with Comcast service would know for sure what's going on with AT&T and Verizon.

This is part of the switching cost. There's a lot of uncertainty about the quality of service you would derive from an alternative supplier.

Also, we found in the data that there was {{ }} during the Netflix incident in those regions in which Comcast faced more competition from AT&T and Verizon. Again, much to our surprise, we're seeing {{ }}.

DR. ROGERSON: Okay. Well, --

DR. ZARAKAS: Can I add one thing to this?

DR. ROGERSON: Yes, go ahead.

DR. ZARAKAS: So, the -- and I think that that information, that data looking at where the zip codes where Comcast is competing with AT&T and Verizon is very informative because it also calls into play the whole notion of moving and nonpayment.

We don't have a full empirical analysis. But in many of those areas where Verizon and AT&T are built out, **{{** **}}**.

{{ **}}**, what Professor Sappington said makes perfect sense. There's a **{{** **}}**.

DR. ROGERSON: Well I'm going to censor myself with follow up questions because we need to move on. So I'm going to turn the questioning over -- now over to Paul LaFontaine, who's going to ask some questions about interconnection. Paul?

MR. LaFONTAINE: Thank you Bill. So, the first question here regarding interconnection is whether or not transit sold by ISPs that engage in SFI with Comcast would place a significant limit on the price that Comcast can charge for access?

So, more specifically, this is the question that I would like for the panelists to address. Comcast has settlement free interconnection arrangements with a number of major ISPs, and many of them sell transit services.

Content providers can send traffic to Comcast by purchasing transit from these settlement free peers. However, **{{** **}}** is available through settlement free transit. And **{{** **}}** is now paid peering.

So as of today and looking forward over the next few years, will the transit prices offered by settlement free peers limit the price that Comcast can charge other ISPs, CDNs or content providers for direct interconnection?

So why or why not? And we'll start with Professor Farrell.

DR. FARRELL: Well let's see. I'd say a couple of things. One is if you think of the constraint as a constraint from being still higher than they would otherwise be, perhaps. I don't know.

But I wouldn't put too much weight on that because all of these settlement free deals are themselves voluntary and endogenous. And so if for other reasons a large consumer ISP wanted to charge high termination fees, they could just either limit or not renew these settlement free deals.

So, I don't think it's shown to be a stable fact of the world that there are large numbers of settlement free deals that adequately constrain interconnection pricing. And that's true both as I think demonstrated by the Netflix incident in terms of the availability of settlement free termination. And more abstractly by the fact that these deals are themselves endogenous.

MR. LaFONTAINE: Thank you. Would you like to respond?

DR. ISRAEL: Sure. I mean, I can clarify my view on this because I'm not sure it's totally -- or let me make sure it's clear.

So, I don't think that it's the existence of settlement free peers or a small price of transit per se. I don't think it's settlement free peers per se that is the key argument about what constrains the price.

I think what matters is that there are lots and lots and lots of paths into the Comcast network. Lots of capacity into the Comcast network. And content providers, edge providers, particularly through CDNs are in the business of making use of all of those paths into the Comcast network.

So as a result, when Comcast thinks about sort of a threat it could give to a content provider to try to -- or an edge provider or a CDN to try to raise the price, if it tries to raise the price to a specific CDN or to a specific transit provider, those people are free and regularly do move their traffic to other routes. Right.

And so the end result is if you actually want to try to threaten somebody that you've got to pay me more or you can't get into the network, Comcast is effectively forced to stop that content from going through all of these different routes. The end result would be to substantially reduce or cut off entirely, Comcast’s connectivity from the broader internet, right?

So the importance of those paths is that this content can pool itself together and find the best transit path. And so the threat that Comcast would have to use to exercise its alleged market power, would effectively be to choke itself off largely from the broader internet. That places substantial constraints on Comcast's ability to exercise any such threat.

MR. LaFONTAINE: Do you think -- one follow up. Do you think your answer depends on you know, as more and more of the large content providers move to paid peering, do you think that changes your answer at all in terms of degradation from the overall internet?

DR. ISRAEL: No, I mean as I understand it, in many cases content providers switch to some direct interconnections or paid peering. But they also rely on other sources. There are many CDNs that have direct interconnection, but also are constantly monitoring transit paths.

I mean, we have an example with **{{**

}} and continues to use these other transit paths. So as long as CDNs are in the business they're in, of making use of all these transit paths, then I think the same argument works if we were to try to raise the price of that direct interconnection deal. They have a variety of ways to get there. And we would have to choke all of them off to make the threat valid.

MR. LaFONTAINE: Thank you. Dr. Evans, would you like to respond?

DR. EVANS: That's exactly what Comcast did to Netflix.

So just to begin with, as a technological matter, Comcast owns its network. It has the ability at the edge to decide what comes in, what goes over it. And everything else is a matter of contracts and deals it's negotiating with people.

In the case of Netflix, the sequence in

Netflix's case, now remember, Netflix is sending a lot of traffic, so it's easy to figure out whether a particular transit provider or CDN is carrying it. So you can target that transit provider or CDN.

And sequentially, in Netflix case, in each situation when it did a deal, the result of doing a deal with a CDN back in the 2009-2010 period, and then transit providers later on, was in fact in each case, the pipe was congested or the transit provider or CDN was approached and told that they were going to have to pay an interconnection fee. And that happened sequentially with CDNs and multiple transit providers.

So the Netflix experience shows that in fact Comcast can target particular OVDs. And make decisions on whether to degrade their service, and they can do that directly with the OVD or they can do it with respect to the CDN or transit provider that the OVD is dealing with.

That in fact is what happened with the Netflix episode.

MR. LaFONTAINE: Thank you. Professor

Carlton?

DR. CARLTON: I would briefly add since David was talking about the Netflix experience. And I'm sure we'll probably talk in more detail about it.

But what I take from that experience in terms of evaluating the empirical magnitudes of the questions you and Bill are asking to get a sense of how much you can really raise that interconnection fee. What I take from that experience is you know, roughly it's **{{ }}** was the interconnection fee. That's what we're talking about.

So, you know, the underlying assumptions of under what conditions do you need empirical facts to get incentives to raise the interconnection fee? I mean I understand churn and all that stuff matters.

But, don't we know it amounted to about **{{ }}**. That's what we're talking about. We need to compare that to whether we think that's a big number, a small number. Even if you ignore what Mark has explained, the caveats to that. How that number -- whether that number really reflects an increase in price.

Putting all that aside, I mean, you accept it. It's **{{ }}** and you go ahead and pay that. And that's just the existing state.

DR. ROGERSON: Okay. If I could say one thing here. You know, if Shane looks a little sad, you took away his question. He wanted to ask you that.

DR. CARLTON: Oh. Oh, oh, okay.

(Laughter)

DR. ROGERSON: So just to cut off on that.

DR. CARLTON: Okay.

DR. ROGERSON: On the really narrow question that he asked, he said, would settlement free -- availability of transit from settlement free connection in and of itself restrict Comcast's ability to simultaneously raise all paid peering charges? I heard everyone say no, that wouldn't do it.

I heard you say that. And I heard you say that. And then you went on to discuss could they pick on an individual guy. Is that a fair summary?

DR. ISRAEL: No, I think -- I mean, I think I said the existence of many transit paths constrains Comcast's ability to raise prices. I think that's --

DR. ROGERSON: So -- but the question was, is the availability of transit from people that have settlement free interconnections with Comcast, now and looking forward over the next few years, would that in and of itself, constrain Comcast's ability to raise paid peering prices to all people that want to directly connect with it, CDNs, content providers, whatever?

DR. EVANS: But Bill, I think the assumption that there's no change in the contracts, or is it can we make it endogenous?

DR. ROGERSON: Well no, looking ahead -- looking ahead with however the - whatever the arrangement for settlement free interconnection would take over the next few years. Right? That's a -- that's one question. Another question is can you pick on an individual?

But I thought I heard both sides say, that alone wouldn't do it. But correct me if I'm wrong.

DR. ISRAEL: I mean it would, I'm not arguing that the existence of some settlement free paths means that all transit is going to be settlement free. I am arguing that the existence of many paths and their importance to Comcast, restrains Comcast's ability to raise prices to content edge providers and CDNs generally.

Not just to an individual one, but to a CDN as well. Because the threat point would be extremely costly to Comcast.

DR. ROGERSON: Okay. So actually now I guess I hear you saying it does constrain the prices they can charge a CDN. Does someone want to answer?

DR. FARRELL: Well, it seems to me there's disagreement over the ability to charge one content provider significantly more than is being charged generally for termination. But I don't see how the existence of many contracts at endogenous prices in itself constrains the overall level of those endogenous prices.

DR. EVANS: I agree with that and can I add one interesting detail about the Comcast contract with Netflix?

One of the clauses in the contract is let's suppose there are these **{{**

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DR. ROGERSON: Well I'm going to move us on then because Shane only has one other question to ask and I'm worried it's not going to get asked. So Shane, go for it.

(Laughter)

DR. GREENSTEIN: So how should the FCC think about the effect of the transaction on Comcast's national share of broadband subscribers? This is something we've heard a lot about from the various parties.

So, the theory of harm postulates that bargaining power will increase because Comcast's share of the relevant market of broadband subscribers will grow post-merger. So that raises a very natural question about what's the effect of the transaction on Comcast's national subscriber share?

So that also raises the question of what's the relevant market? So, let's consider the relevant market for broadband subscribers with fast enough connection that they could realistically be able to use an OVD service. Now there's again, a lot of controversy about just how fast is fast enough?

So, rather than me taking a stand on this, I'll put up some numbers and let the various parties comment on it. So let's put up Table 1. Let's see if it's -- have we got it?

DR. ROGERSON: Well I was a -- oh, good. I was assured all you had to say was let's put up Table 1 **{{**Contents Redacted**}}**. Okay, so good.

DR. GREENSTEIN: Now, isn't that wonderful. All right, so there's our Table 1. And let's be clear about what it is. This is the national share of the wireline broadband subscribers served by Comcast at different speeds. Pre-transaction and post-transaction based on the submissions of the parties.

The data itself comes from a filing in December 2014 based on data in December of 2013. All right, so this is the measure -- a year earlier than the filing.

And the post-transaction Comcast -- for Comcast has been based on their calculations of the populations that are served after the various swaps affiliated with the deal. So it's an appropriate market share.

Okay, so let's -- could we start with Drs. Carlton and Israel just to comment you know, on the various dimensions of the data. What is the appropriate minimum speed to think about? And what the data suggests? And if there are any other data that are relevant?

DR. CARLTON: Well, let me just make a few comments and then I'll turn it over to Mark who has studied it in more detail. But, my general reaction has been as I read the discussions about market shares, I get the feeling is, at least in my mind, a confusion on whether we're talking about -- which prices we're talking about.

If two companies don't overlap in their territories, holding input prices constant, then there's no competition for customers. So market shares don't make a lot of sense okay, for a merger where there's no overlap, okay?

Second, the theories of harm that have been postulated, and I think everybody on the -- I don't think anyone's disputing that really. When they talk about theories of harm and then they really then want to talk about market shares, it's because on the input side something's being purchased.

Now, there are two ways to think about input purchases. You are creating monopsony power or perhaps bargaining power. Now we know what that means is you have to have a supply curve over the input. So, let me just give you an analogy and then I'll refer to it here.

Let's suppose I have specialty ice cream stores that make, I don't know, pink ice cream, okay, in Chicago and Boston. And they don't compete and they merge. They don't compete for customers. It seems like there's no problem.

But, someone says well wait a minute. It's 100 percent of everybody in that market. Do I have monopsony power? Monopsony power in what? In buying the input, ice cream.

Well, what fraction of ice cream purchases are accounted for by these specialty stores? Because you can get an ice cream, you can sell ice cream in grocery stores, restaurants, et cetera.

In this case, if you're worrying about monopsony power on the content side, and that's what some people I believe have raised, that somehow that content will be reduced. You have to ask what's the relevant supply curve? What fraction of content are these people buying? Okay.

And content shown at high speeds is often the same as content shown at lower speeds. So it depends what theory -- these market shares make sense only depending on how you want to evaluate a theory of harm. Okay.

And for the content theory of harm, the fact that you're going to say, restrict output of content because you're taking too much rents, that requires that you have some large market share of the content purchased and are affecting some upward sloping supply curve.

I've not seen anything on the other side that talks about the supply curve of content. Or that it is upward sloping. And it certainly doesn't seem specific to a specific speed.

Now, if you want to go on the bargaining side in market shares and you want to say well, I have unique -- I'm the unique toll booth to these customers. Then you have to ask, what changes after the merger?

You already are a unique aspect -- the unique toll booth to customer one. And now you're the unique toll booth for customer one and customer two. I should see it already. Okay.

So, the question is what does the merger add? So I guess my short answer is, in order to understand if these market shares have any meaning at all, I have to know what's the theory of harm? If the theory of harm is I'm going to monopsonize content, there is no content that's necessarily specific to high speed versus medium speed.

So it just doesn't seem like it's the right question unless you pose a specific theory of harm on the supply side, which is I think where everyone is focused.

DR. GREENSTEIN: All right, let's hear from the other side. Somebody -- David, Dr. Sappington? Or would you like to comment on this?

DR. SAPPINGTON: Sure. I'll start on that. First I think in terms of the relevant market, I disagree with Dennis' observation that there really doesn't make a difference in terms of speed.

Perhaps the content itself delivered

from the origin source might look the same. But if there's a difference in how it's perceived by the customer at the end of the day.

So when you get a Netflix movie, the speed at which you receive that will make a difference in the quality of the viewing experience. And so the speed does matter I believe.

And on that dimension, the Chairman of the Commission I think has made it quite clear what he perceives going forward to be the relevant speed. If I can quote him, he said, “25 megabits per second connection is fast becoming table stakes in the 21st century. And even 10 megabits doesn't fully capture the increasing demand for better, wired broadband.”

So I do think there is -- we do need to talk about the relevant market in terms of speed. And then I think in the -- my reply declaration, we looked at the case in which a new OTT service, based upon the experience that DISH has experienced with DISHWorld, has to have access to these high speed customers.

And the combination of Comcast and Time Warner, can make the difference between a service like that being viable or not. If you can get access to just Comcast customers, you can **{{ }}** a profit. If you can get access to just Comcast and the other cable companies' customers, you can **{{ }}** a profit.

But if you cannot get access to either of those customers, you can't be profitable. And so there, the market shares do matter. And in terms of the market shares that we have up in Table 1, that's a retrospective, outdated, look back at market shares.

I think we need to be looking at what will happen in the future. And so what I did in the supplemental reply declaration I filed a few days ago, I try to suggest one way in which we might try to project what the future market shares would look like.

And the possibility there that I suggested was, in light of for example, Time Warner's announced upgrades of all of its facilities to be able to serve virtually all of its customers with the high speed 25 megabits or higher speed by {{ }}, let's take the exercise whereby we look at those current market shares and think what would happen if all of the subscribers who are currently getting 10 megs or higher are able to receive and decide to purchase 25 megs or higher a few years from now.

If you do those calculations, then essentially if we do not allow the merger, Comcast would have roughly {{ }} of that market share. Whereas if you allow the merger to proceed and do the divestiture that Comcast is proposing, the market share increases to roughly {{ }}.

DR. GREENSTEIN: Okay. Let's have Dr. Israel and then we'll go back to Dr. Farrell.

DR. ISRAEL: Well I actually think since David brought up the analysis that he did on the DISH OTT that provides some insight into at least one part of the question. You might ask what the share is? Right.

So the analysis as I understand it, said that if the -- under the financial analysis that was presented, if DISH OTT service lost access to all Comcast and all Time Warner --

DR. GREENSTEIN: We're just talking about market shares here too.

DR. ISRAEL: Right, but this is a way to think about it. One theory of harm that you might think comes from the market shares would be that the market share post-merger is sufficiently high that the combined firm would have the ability to foreclose an OTT.

That would be one theory under which you might say these shares are relevant. So I just wanted to say that if you actually press on the model that was presented, you can see how extreme you have to be in terms of what you're saying about these shares and the relevant markets.

For example, the model assumes that **{{**

}}

If as I said, not only is that the relevant market under the model, but no one under that speed subscribes to the OTT.

If instead you simply say it's lower under that speed and you reduce it by **{{**

}}.

The model also assumes that Comcast and Time Warner can literally turn off access to the DISH OTT for all of its subscribers. Even though DISH is distributing through a CDN, which comes without a direct deal with Comcast.

So I think to the shares, one theory of harm that's probably been most discussed with the shares is, are the combined shares of the company so large under some definition of the market, that the company could actually foreclose an OTT?

And I actually think that what the model -- what David's model shows is unless you take the extreme view that **{{**

}}

Beyond the foreclosure problem, I agree with Dennis that I don't see -- I think you have a monopsony theory or a retail harm theory. And I don't see how these shares speak to either of those.

DR. GREENSTEIN: Professor Farrell?

DR. FARRELL: I think this is a question that's turned into two questions. On the one hand you have the nitty gritty of what's up on the screen. And I think that's what you were meaning. On the other hand, Dr. Carlton took us up to a more elevated level of what is market definition for and so on.

I've long been a big believer that market definition needs to be appropriate to the theory of harm. And that it's a tool for evaluating the plausibility of a theory of harm. And I'd like to think that the merger guidelines agree with me.

And so to that extent I agree with what Dennis was saying. I think a lot of what I've submitted is about how the terminating access issue is in fact merger-specific here. Although it's not a completely obvious point.

And as to monopsony, I think it's a little more complex than just the rising supply curve that you mentioned. That's how they see the classic case for monopoly -- monopsony, excuse me.

DR. CARLTON: Yes, can I respond?

DR. ROGERSON: Yes, why don't you -- yes, but actually we're having our theory discussion now. But that's fine.

DR. CARLTON: Well, this is on the theory.

DR. ROGERSON: Well this will be -- yes, we've moved into that. And we're going to do another minute -- few minutes on theory. And then we're moving to facts. Okay? But let's complete this theory, then facts.

DR. CARLTON: So, David's response actually makes my point. If you're worried on the input side, on the content side, it would have to be that people who are watching high speed are demanding much different content.

So that the people -- and that those are specialized resources that can't be used for people who want to watch content at lower speeds or want to watch it on cable TV. Or want to watch a commercial that those content people can provide. Or want to watch abroad. Okay?

That's what you need to monopsonize a market. And I've not seen anybody suggest that. Now the foreclosure theory is different. Okay? In the foreclosure theory you have to -- you can ask these scale questions. And I think that's what Joe was talking about. That is -- or if you are combined, you now have bigger incentives and ability to harm an OVD. And that I'm sure we'll talk about.

Now on the interconnection point that Joe was saying, he was saying exactly that what his statement does, is look at what happens as size goes up. And that's what he was trying to prove. And my response to that is, I understand what he did, but I understand Mark’s criticisms, but even if I accept that, it's tiny.

So that's the fact side. So I agree with Joe. Market definition only makes sense if you have some theory of harm. And then you want to empirically evaluate it. And I think seeing Joe's stuff, he did that. And my response to that -- and David did that too. My response to that is, it's tiny.

DR. EVANS: So, do we have an agreement Dennis that there is an increase in price predicted here. But your observation is that the increase in price is **{{ }}**? So are you accepting that or are you still disputing something?

DR. CARLTON: Yes. So, since there's a division of labor here, Mark has put in why he thinks that analysis that both you and Joe have put in isn't accurate. But, my point is simpler. I'm saying I'm not going to --

DR. EVANS: I got to cut in.

DR. CARLTON: I'll let you -- I'll concede that to you. Assuming it's true, it doesn't amount to much. And if you compare that against benefits, it's nothing.

MR. LaFONTAINE: Can we turn to that -- can we turn to that evidence now? But that was our next topic.

DR. EVANS: So long as we're going to get back into a discussion of Dennis' point, which he's made now I think two or three times, that the fee paid by Netflix is **{{ }}**.

MR. LaFONTAINE: That's coming up too.

DR. EVANS: Okay. We're going to get into that later? Okay.

MR. LaFONTAINE: That's coming up too, yes. That's coming up too.

DR. EVANS: Okay. So, we're going to get back to that?

MR. LaFONTAINE: Sure. Yes.

DR. SAPPINGTON: If I could just add one follow up to Mark's point?

MR. LaFONTAINE: Sure.

DR. SAPPINGTON: His observations regarding the interpretation of the case study for DISH I think are useful. What they lead us into is essentially the observations that David has made in his declaration -- his reply declaration.

Where he points out that really what

we're looking at is what powers would Comcast and Time Warner acquire because of the merger? And they would acquire the power to essentially kill Netflix. It doesn't mean they'll necessarily do so. But they have that power.

And then when you interpret that in terms of the bargaining, which goes into determining the fees that will then be charged, that's where the problem arises.

DR. EVANS: And this is not a case about killing Netflix or killing anyone else. This is a merger case.

So the question here is whether the results of the merger are going to make things worse? Whether there's going to be you know, partial foreclosure? Whether things are going to get worse than they otherwise would be?

So I'm not at least making any claims that the OVD industry is going to be shut down or any of these extreme statements of foreclosure.

DR. ROGERSON: I think we've actually had a good taste of what actually I believe both sides have agreed to. That the theory on this issue could go either way. And it's a little confusing.

And what I'd like to do now, on this issue of do larger ISPs, when large is defined appropriately, have more bargaining power over interconnection fees?

So, rather than discussing the theory anymore, two different pieces of factual evidence have been submitted in the record. And Paul is going to consider each in turn and ask you to comment on them.

MR. LaFONTAINE: So the first piece of evidence we'd like to discuss is that Dr. Evans reported that interconnection fees that Comcast and Time Warner Cable charges various entities for direct interconnection or paid peering that we can show here and hopefully -- yes, Table 2 right there. Wow, they got that up quick. **{{**Contents Redacted**}}**

He showed that the direct interconnection payments to Comcast **{{**

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So my question to the panelists is, how should this data be interpreted? So I'm going to start with the Applicant's side.

DR. ISRAEL: I mean, so I'll -- to David's earlier question, I don't disagree with the numbers that are up there. Although I'll talk some about -- well generally, I don't disagree with the numbers that are up there that indicate that the **{{** **}}**, right.

I don't want to get past what you're commenting on now. So I hope we'll have a chance to talk about whether there is a general relationship between size and the amount of the payments. So how we would project what would happen post-merger. If we can come back to that, I can save that.

And I also hope that we can come -- my claim broadly on this topic though is not to deny these specific numbers, but to say that although it is true today that larger ISPs in some cases like this charge higher interconnection payments, I think that's a reflection of quality and capacity and general economics of two-sided markets. And it's not harmful to consumers.

But I guess I would say we can come back to those theory questions. On the specific numbers, I don't disagree that **{{** **}}**. I would come back to Dennis' point that I think in the end, if we put together what that adds up to, it's **{{** **}}**.

And my key take away from this would be that as long as we're going to base our analysis of the merger on comparing specific points of data between what Time Warner currently does and what Comcast currently does, I hope this afternoon we get to do the same thing in terms of speed and number of WiFi hotspots and all the other aspects on which we might compare the two firms.

MR. LaFONTAINE: Dr. Evans, would you like to respond?

DR. EVANS: Well, maybe I misheard what

Mark said. But I think you're agreeing that there is in fact a positive relationship between ISP size and price. So I think we have agreement on that.

And then there is some speculation, which I think is embedded in what you just said Mark -- Professor Israel, Dr. Israel?

DR. ISRAEL: Mark is fine.

DR. EVANS: Yes, why don't we just do first -- can we just do first names? That would be great.

So Mark, embedded in your comment is the notion that well maybe if we adjust it by quality you know, this would somehow be different. And that was also in your declaration.

And the problem I guess I have is that you haven't put forward any explanation of quality that isn't almost perfectly correlated with size. And I'm not going to go into the results that I had in my declaration now. But there doesn't seem to be anything persuasive there.

There's this piece of evidence that we're talking about now. And I don't know whether

I can mention the Netflix contract evidence now, is that appropriate on this quality point?

MR. LaFONTAINE: Sure.

DR. EVANS: So in the case of Netflix, Netflix negotiated with a number of ISPs. And we know something about what they negotiated over. And I've been able to talk to them. And I've been able to read the contracts.

And that negotiation is over the **{{ }}**. It's over the **{{ }}**. It's not over the **{{ }}**.

So if you look at the contracts themselves, they're about **{{ }}**. And if you look at how the contract negotiations were done, at least according to the client, **{{ }}**. And **{{ }}**.

There has been you know, nothing that I have seen that points to some other dimension of quality that's relevant to Netflix in the case of those contracts either on the cost side or in terms of the customers, that would explain the difference in prices.

So I think to my mind, the evidence on the relationship between price and size, again to my mind, is fairly conclusive at this point. We see it from {{ }}. We see it from the {{ }}. And I suspect there are going to be things that we can infer on the programing side as well.

But I think it's pretty conclusive. And I don't see evidence that it's -- that there are other explanatory factors for it.

MR. LaFONTAINE: Mark, would you like to respond?

DR. ISRAEL: Yes. So let me just be clear what I agree with. I agree there are a small number of ISPs who have direct interconnection deals with Netflix and with other OVDs or other CDNs.

And those ISPs in some cases charge for those direct interconnection deals. And that because of the nature of the ISPs who could have such deals in terms of having a backbone and enough interconnection points, et cetera, that in general, those ISPs tends to be larger.

All right, so I'm not going to dispute the facts that there are direct interconnection deals. They tend to be with larger ISPs. And in some cases they involve positive prices.

My disagreement is over the -- that's a fact in isolation. Right? The question is whether the presence of those direct interconnection deals with the large ISPs all in, when you think about the quality of what they're providing. When you think about the fact that those large ISPs are providing backbone services that expand the capacity of the internet as a whole, the question to me that we have to answer is not whether that one fragment of a price in a two-sided market is higher or lower, it's whether, all in, consumers are benefitted or harmed by what those larger ISPs are doing.

DR. EVANS: But wait a second, that's a -- I'm sorry, can I get in?

MR. LaFONTAINE: Go ahead. Go ahead.

DR. EVANS: So you sort of stated the final question for this analysis. And I assume that we'll kind of back into that.

But just sticking with these contracts, what I think I'm hearing is that we all agree that what the evidence shows is that larger ISPs charge higher prices to OVDs and CDNs. And we're not getting any specifics on what quality measure could explain these differences in prices.

With respect to the Netflix contracts, the negotiations between Netflix and the large ISPs was a negotiation over getting access to the subscribers. It was a negotiation over **{{**

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That is pure and simple what the negotiation was over. And I haven't seen any identification of some other factor that would as you say, "quality control those prices" so that you're not getting that very significant upward relationship.

DR. ISRAEL: I think -- I mean, obviously we have to do this quickly. So haven't given every answer here. I think it's useful and I don't know how you want to organize it.

You talked separately about what we learned from the Netflix data and what we learned from the Cogent data. Because the nature of those relationships are different.

DR. ROGERSON: We're doing that next.

DR. ISRAEL: So we're doing Cogent next?

DR. ROGERSON: Yes. Yes.

DR. ISRAEL: So can I have two minutes to say what I learned from the Netflix data and the nature of those prices?

All right, so it's important to understand -- so David, can I call you -- we're mutual on first names now, right? So David is okay?

DR. EVANS: Well of course you have a problem on this side between the two of us.

(Laughter)

DR. ISRAEL: In this case it's clear.

David has presented evidence on -- I mean detailed evidence that I'm not disputing the evidence in general on the nature of the terms that Netflix has. The cost that Netflix bears and the cost that the ISPs bear to take traffic from Netflix to an ISP's customer. There is detailed data in his backup. Right?

So I think you learned two things. One thing is you -- and I'm not going to dispute the fact that specifically about the interconnection fee, you see **{{ }}**.

I do disagree with the **{{ }}** number that David reports. That's an average of a **{{ }}**. In fact, the marginal price is **{{ }}**. And then **{{ }}**.

But I don't disagree that that number exists. And it **{{ }}** for the very small ISPs. I take issue with two points.

One is that I think that the relevant question is what's the -- to consumers of the internet, is what's the cost to get data from Netflix to the end consumer? That's the question that matters in the end for whether -- what's beneficial and what's not. Right?

In the case of small ISPs, by David's own data, what happens is Netflix delivers it to a transit provider. The transit provider takes it to the ISP. The ISP takes it to the consumer. Right?

By David's own numbers, the part of the ISP to the consumer and the Netflix to the transit provider parts are whatever they are, but they are basically the same in these different arrangements. The transit provider under David's numbers -- charges Netflix **{{ }}** for that service on average.

Left out of David's numbers is the fact that the transit provider also charges the ISP something. Which by the data Cogent provided, tends to be on the order of **{{ }}**.

So the transit provider imposes **{{ }}** that affects internet consumers on both sides. Right. When you go to a direct interconnection deal, that cost is by David's own numbers, completely eliminated. The transit provider costs are taken out of the system. That's an efficiency that has to matter. That's my first point.

So then if we accept that, there is not a relationship that says it gets more expensive for consumers as ISPs get larger. At that level it goes the other way.

The second -- all we're left with then is the question of in some cases Netflix has a deal that says there's no payment from Netflix to the ISP. In some other cases Netflix has a deal that says Netflix will pay the ISP some money. I don't dispute that those deals exist.

All I would point out is in a two -- and Joe's analysis in his first report makes this very clear. What that is a **{{ }}** -- if it's **{{ }}**, if I take that number, that's a **{{ }}**

cost to Netflix when that megabit per second is transferred.

Remember, consumers are being charged on both sides of this market. So that's exactly a negative {{ }}. Comcast receives {{ }} every time the data is moved across the network. The only question for consumers would be whether the {{ }} or {{ }} gets passed through more.

But to a first order, it's a transfer payment that lowers prices on one side and raises them on the other. I don't know which way that goes. I don't think any of us do.

But I think it's important to say it's a transfer payment on a two-sided market, which is fundamentally different than what large ISPs are doing efficiently, which is remove {{ }} of transit provider costs from the entire system.

DR. EVANS: Do I get to respond to that?

MR. LaFONTAINE: We're going to go over the two-sided market theory later. So, can we move on from here?

DR. EVANS: I think I need to respond to that one. I mean, I can be brief -- I can be brief on it for you guys.

DR. ROGERSON: Why don't you briefly respond. Then we're going to hit the other piece of evidence. Okay?

DR. EVANS: I'm going to be very brief on it. I mean, I just disagree with all the facts that Mark presented.

If you just go to Table 5 of my second declaration there is an easy way to do the comparison. There are several hundred ISPs where Netflix connects directly at the IXP with a -- with its own CDN. Cost for that is about **{{ }}** -- Comcast cost is about **{{ }}** at the IXP.

The couple hundred ISPs where Netflix is connecting directly at the IXP, those couple of hundred, there is no access fee, it's zero. And in the case of Comcast, we can debate what the number is, but it's a positive number.

So I'm not --

DR. ISRAEL: I don't disagree -- I'll

take ten seconds. There are also hundreds, on the next page of the backup, I'm looking at the backup calculation. There are hundreds of ISPs who connect through a transit provider.

In that case it's **{{ }}** plus **{{ }}** to the transit provider. Plus, the transit provider price on the other side, which is not included. All of which will be directly comparable -- all of which is a cost from all of the --

DR. EVANS: But that's not the "but for" world. You need to compare Comcast to a plausible "but for" world.

DR. ISRAEL: No, I'm making --

DR. EVANS: So if you compare Comcast to another ISP that's not connecting at an IXP, then that's not the right comparison.

DR. ISRAEL: The question is whether there's a general relationship between size and what customers pay. The smallest ISPs use transit provider and that costs more. When you get to the larger -- when we get to the larger ISPs, there are some who pay an interconnection fee, which is a transfer price across a two-sided market. And some who don't.

And I think we're going to turn to the implications of that two-sided --

DR. EVANS: So the fact that Netflix has to spend more money to connect to a tiny ISP that is an economic justification you're telling me for Comcast to impose a terminating access fee?

DR. ISRAEL: It's not a tiny -- it's not just a tiny transit --- **{{**

}}, which would change as a result of this. Therefore, **{{ }}** pays transit providers prices that would be eliminated in a situation where they have a direct interconnection to deal with.

It's not just tiny ISPs. Any case in which a transit provider is in the middle, it imposes real costs on the system. The larger ISPs take that cost out of the system. That's all I'm saying.

MR. LaFONTAINE: So turning to the transit cost relationship now. So in your first submission, Professor Farrell, you submitted a

Table on the data on transit prices that Cogent charges various ISPs and the number of subscribers served by each ISP.

You interpreted this data as showing that Cogent generally charged a lower transit prices to larger ISPs. And interpreted this in turn as suggesting that larger ISPs would have more bargaining power in negotiations over paid peering.

This original analysis sparked a lot of back and forth. So we'd like to cover that now. So first, Professor Farrell, I'd like to hear about what your current view is on what that evidence shows.

DR. FARRELL: Well, I really said this in my reply declaration. You know, I think when you just look at the data, pretty raw if you like, the pattern jumps out at you. The bigger ISPs, biggest ISPs, appear to have significantly more bargaining power with Cogent.

And I reported that as a fact about just looking at the data. Mark asked himself, does that go away when you allow for something called quality?

I'm not a hundred percent crystal clear exactly what quality is meant to mean here. But you can allow for other factors.

It was 17 data points. Or it became 17 data points after slight changes in the sample. So there's a real econometric risk, I don't have to tell you, in trying out too many different things. But nevertheless, it's sensible to ask that question.

Through no fault of his own, I think Mark ended up using what we believe is a fairly low quality set of data on something that you might call quality. It's low quality in the sense that there were zeros where there clearly ought not to have been zeros and perhaps in some other ways.

And it's also pretty highly collinear with size. And so even if it were not for the quality of data issues, putting a fairly highly collinear variable into a regression with 17 or so data points, you're at risk of incorrectly as well as possibly correctly, finding a loss of statistical significance.

However, as it happened, when we looked again with a different, and I think more reliable data set for something you might call quality, the coefficient on the quality variable became insignificant. And the coefficient on size, estimated coefficient on size, not only returned to striking statistical significance, but was actually not all that different from the original coefficient if you'd run just the single variable regression.

Which we did, although I hadn't done in the original declaration because it's only 17 data points. So I thought you should just look at them.

(Laughter)

MR. LaFONTAINE: Mark, would you like to respond?

DR. ISRAEL: First of all, I mean, I don't -- we're not arguing. Nobody disagrees that there's only 17 data points here and so we should all be cautious about what we learn from them.

We did turn from a theory that Bill summarized that's sort of ambiguous to data. And so we're trying to learn from the data that we have as best as we can. I mean, I think one takeaway here is that it's hard to -- also -- to infer any sort of relationship from just those 17 data points. It's fairly limited data that we're both saying.

But I would just make a couple, maybe three notes. And I'll try to be quick. One is, I mean, it may be that Cogent and Netflix differ on what's relevant in terms of quality. I mean I will note that in the Cogent -- in Joe's response and from the Cogent engineers, we all agree that quality can be difficult and we don't have a perfect measure.

But there wasn't a fundamental disagreement that the number of interconnection points or cities or something about the places where you interconnect is a measure of quality that you might try to use. There was some difference of opinion about how you should measure that and how precise we can be.

But there wasn't this sort of fundamental reaction that you can't think about that as a measure of quality. Instead, there was an argument about should it be cities? How should we measure that?

And the claim was that my measure of quality was noisy. And basically there's been -- we all have now engaged in this exercise of trying to see what we can learn from their regressions as well as we can.

Sort of two criticisms that have been made of the regressions that I did. One is that the variables are too multi-collinear. Of course if you have an alternative hypothesis in mind that another variable may be omitted, the fundamental in that hypothesis is that it's correlated with what was included, or it causes no problem.

So of course it's correlated. The question is, is the regression able to sort out which of those effects are relatively more important? The nice thing about multi-collinearity is it's totally self-diagnosing in regressions. If you have a problem, you put it in. All the standard errors are huge. Nothing is significant.

In the case of my regression, you put

in the quality metric. Standard error on subscribers doesn't even go up that much. And the quality measure is significant. There is sufficient variation even in these 17 observations to say that the quality metric appears to matter and the subscriber metric does not.

So then the criticism was, well the quality measure may be measured with error. Now normally -- and we'll try a different quality measure. Normally if we think -- and then again, it's a statistical test for measurement error. And what measurement error does in general is reduce the size of the coefficient.

So actually what happened, when Joe put in an alternate quality measure, which is number of cities, it doesn't account for more than one interconnection point per city. It doesn't account for how many choices there might have been.

He puts in that measure. It's insignificant and its coefficient is much smaller than mine, suggesting if anything, it has the measurement error problem, not my measure.

But even if we don't want to argue about that, it's only 17 data points that we're pushing hard. But we can see what we can get. We could put both of those quality measures in together. Again, if the regression is overloaded, you won't get statistical significance. The results will blow up.

Instead, if you put both of those quality metrics in together, my original quality metric goes back to being significant as it was in the original specification. Joe's quality metric does nothing. And the number of subscribers is back to being insignificant.

Now, what I take away from all that is not that with 17 data points we have perfectly identified the relationship. It's that clearly in just looking at or regressing or however you want to do it, subscribers on -- or prices on subscribers, you have an omitted variable problem.

And even though a fairly noisy measure of quality, it makes that observed relationship go away.

DR. EVANS: I know you had an asterisk next to that variable Mark, but my recollection is it was not significant at the five percent level, which is the level I've always used professionally, but at the ten percent level.

So my interpretation of that regression was that you put in an extra variable. **{{**

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And the additional measure you put in was correlated with the number of subscribers. And I believe the correlation coefficient is something like **{{ }}** or **{{ }}**.

DR. ISRAEL: Can I respond? I'll take ten seconds.

DR. ROGERSON: Yes, please.

DR. ISRAEL: I mean the key statistic on the connections variable in my quality measure and either regression with it or both is on the order of **{{ }}** or **{{ }}**. It is borderline significant, fine. But I mean people -- I mean, certainly at the level we all have looked at and seen evidence from.

The key thing is what happens, when you're measuring for omitted variable bias, the key thing is what happens to the other variable? What happens to its coefficient?

I would totally agree that if what happened is its coefficient stayed roughly the same and the standard error blew up, all I did was overload the regression. Its standard error goes up slightly. Its coefficient drops precipitously.

In fact, that variable would be insignificant even if I used the original standard of error from the original regression. There is a large drop in the sign -- in the magnitude of that coefficient when you put in a quality measure. Which is the classic econometric evidence of an omitted variable.

MR. LaFONTAINE: Thank you. We're going to move onto the next topic now. Thank you.

DR. GREENSTEIN: All right good. So let's return back to the topic of how the FCC should think about the current magnitude of interconnection fees. And I'm naively optimistic we will be brief.

So, you know, let's consider it. We've already stated sort of part of the argument. The interconnection fees for Comcast and that they charge CDNs and content providers are **{{ }}**.

Let's see if we can sharpen to the question that's at -- that we want to consider was, does this or doesn't it show that the overall harm is small? And then the follow up question which is, does it or doesn't it show the overall harm and the magnitude is small or large relative to the benefit?

So, I think we have the argument. Let's start -- actually, let's start on this side. Say, Dr. Evans, if you would like to go with that. And then we'll go back and forth.

DR. EVANS: So I have an opinion on this.

So Dennis has, you know, pointed out a number of times that the amount of money was **{{**$ **}}**. So a few reactions to that.

The one I want to begin with is, that

number may **{{ }}**. It was blasted all over the newspapers. It was a headline you know, covered in the New York Times. This was a massive big deal.

For the first time, Comcast was able to get Netflix to pay. It was able to move someone that refused, insisted that they weren't going to pay interconnection fees, got them to agree to do it. Got an industry that had been settled on not charging interconnection fees, to move to a point past zero, traditional price for interconnection fees for hundreds of ISPs out there. And got Netflix to cave and agree to pay a fee. This was a big deal.

Comcast, around that time, was in the throes of getting ready for this merger in the middle of the net neutrality debate. And I don't think it's plausible to believe that that fee reflects the full exercise of Comcast's monopoly -- I'm sorry, Comcast's market power.

So I don't take that **{{ }}** as an indication, a good estimate of what the full exercise of Comcast market power would be. So I think that's the -- that's the first and overarching observation.

You know, having said that, it is **{{ }}**. And there are other OVDs out there. And this is an industry that will obviously expand. And we can talk about the total effect. I mean, my view on the effect that the FCC should be worried about is that it -- you should be focused on several things.

One is what happens with the full exercise of Comcast market power as the base. And that will get into the effect of the transaction. But the effect of the full exercise of market power on the amount that Comcast can charge OVDs like Netflix and like other ones that we don't even know about.

Second of all, I think it's very important to keep in mind the expansion of the industry. So what I anticipate over time is that the OVD business is going to expand enormously. So the base on which you would be thinking about any kind of price increase, is likely to be far larger going forward than it is today.

And the third thing I would encourage the FCC to think about is that you know, we're all sitting here thinking that well, OVDs, that's the big bandwidth intensive application on the internet. And maybe that will be it.

But it wasn't a few years ago. And for all I know, someone else is going to come along with some other high bandwidth intensive application that is also going to be subject to the kind of congestion we saw from Netflix.

So I think the base here is full exercise of market power. And then the expansion of the base overall. And then that's the number you ought to be focused on in my recommendation in thinking about what the impact of the transaction is on the public.

DR. GREENSTEIN: All right, I was naively optimistic. But let's keep going. Yes, would you like to respond?

DR. CARLTON: Yes. Let me take a first crack at it. And Mark can add his own comments.

I think the Netflix deal is extremely informative for putting in context the harms that are being proposed. And I don't know what else to do other than to look at the actual evidence in order to evaluate the magnitude of these harms.

The opponents have put forward a variety of theories of harm. Some of which should be occurring right now and they say are going to get worse after the merger. And they highlight the Netflix example.

And I think there are several things you can say about the Netflix example. First, Mark is -- in the previous session, debated the previous question, was debating how you should interpret the **{{ }}**. I'm saying, is it really an exercise in market power or not? I'm putting that aside.

So it is. Just for argument's sake. I'm saying is okay, **{{ }}** annually is what you've shown. Okay. How should I think about that? Well, I don't like any harm. You know, I used to be at the Department of Justice, zero is what I like. Okay, or I actually like positive benefits to consumers.

But we're going to talk about benefits later. So I'm not going to talk about benefits. I'm just going to talk about harms. {{ }}. Let me examine the foreclosure theory in light of that.

{{ }} they've imposed on Netflix. And what does that imply about the foreclosure theory? Well, what does Netflix think about {{ }} compared to their revenues that I think are over a billion. I don't know the exact number. Well, Netflix I believe commented publicly, no big deal. Well, I can see why.

What do we think it's going to do about content that Netflix goes out and buys? Does {{ }} annually harm them? I don't think so. I think Netflix has announced how they're expanding. That is going to David's theory that it's going to reduce content.

So I just don't see the magnitude of the numbers being important. And now, let me go to what David said, because I think that is important. It's not like the {{ }} is a one-time fee that's going to disappear. It's an {{ }} deal.

So we're looking forward, which is then would, what's going to happen in the future. For {{ }}, that deal is in place. Okay. So you're protected for {{ }} from this theory.

Moreover, if you look at the structure of the contract, it's that the {{ }}. Then it jumps up to I think it's like {{ }} or something like that, {{ }}.

Now, if I'm thinking of a theory of foreclosure, {{ }}. They're doing a terrible job if this is a foreclosure strategy. Okay?

So now, then he says well, what about other OVDs? Who are the other OVDs? Well {{ }} So they're protected. So now what does that do to your incentive to harm other OVDs if {{ }}?

If Netflix is one of the leading OVDs, the next OVD is -- what you can do to the next OVD is going to be constrained by what you've done to Netflix, which {{ }}. Moreover, even if you did want to harm another OVD, what would happen? Well, {{ }}. Netflix could buy that other OVD and expand.

So it just makes no – {{ }} roughly that I'm using rough numbers, is extremely informative to me about showing 1) the magnitude of the harm of the market power that they're claiming is it seems to me minuscule. Even if you accept that's market harm.

Second, it's {{ }}. So therefore, I don't have to really worry over time. And I think it will have no effect on content provision.

So, I just think it's extremely informative to put in context the magnitudes we're talking about. They're trivial. Even if you accept that they are an exercise in market power.

DR. GREENSTEIN: Professor Sappington, do you want --

DR. SAPPINGTON: I'd just like to make two follow up points. I agree with Dennis in the sense that we do want to look to practical experience to understand what are the likely prospective harms of the merger.

But I just want to emphasize the point that David made. We also need to look carefully at the context in which these empirical observations are made.

It to me was startling that there was any sort of charge imposed on Netflix or any other OVD during this period when Comcast knows it's under the microscope. It knows it needs to come to the Commission and the Department of Justice to get approval.

It just astonishes me that they would make any sort of move along these lines at this time period. So I agree with David entirely that this understates the harm we're likely to see in the future.

Also, the second point is that my understanding of the **{{**

}}.

DR. ROGERSON: Why don't we go back and forth. Go ahead.

DR. ISRAEL: I'll respond on a few fact elements I think. First off, I just disagree with the notion that this was somehow some break from practice, both in terms of Comcast and other ISPs prior to this deal.

{{ **}}** had direct interconnection fees at a price. **{{** **}}** who carry all sorts of traffic of OVDs and others had direct interconnection deals at a price, both with Comcast and with other ISPs. Right?

So the notion that this was the first time that an edge provider or its agents had paid an ISP is simply false. So what do we take from the context of this negotiation then, right?

The -- Netflix basically came to Comcast and said we don't want to pay. We want direct interconnection for free. And Comcast said we have a variety of other deals with similarly situated people where they do pay. We have that. Other ISPs have that. And so we don't agree.

They had a commercial disagreement about a price. Where did it end up? It ended up that they struck a deal before Verizon or AT&T or others were having the same negotiations struck a deal. They ended up giving Netflix a price that was **{{**

}}. So they ended up in the middle where I'd expect on a commercial negotiation.

In the meantime, there's sort of this allegation that in the meantime somehow Comcast was engaging in foreclosure against Netflix. In the meantime, Comcast was saying we're negotiating with you. We don't think you should have interconnection for free.

We're not going to let you -- you know, if you try to go somewhere else and backdoor that, ultimately if we see the Netflix traffic, we're in the middle of a commercial negotiation over what the price should be. And until that commercial negotiation was resolved, there was no deal. And they were continuing to work it out.

I mean, there's no -- I would encourage anyone to look at the documentary record for any evidence that Comcast was engaging in some sort of foreclosure or trying to harm Netflix. They were engaged in a commercial dispute about a price which ended up with a price that's {{

}}.

The last comment I would make would just be that again, the FCC can look at the documentary record. The idea that the Comcast/ Netflix deal was struck in the context of this merger is simply false.

You can look at the documentary record. You have all the documents.

This merger came up quickly. Was -- Comcast decided to enter into a deal. The terms of the Netflix agreement, as struck, well pre-existed any discussions or any negotiations of this merger.

And those are long standing deals. And again, you can compare it to previous deals that Comcast and other ISPs have. And Netflix got a **{{ }}**.

And finally, David mentioned that it's done in the context of net neutrality. I agree with that. Net neutrality exists. Comcast has been willing to stand by it. And post-merger as well, will exist in the context of net neutrality, which will protect any harm from the last mile.

So that may be true, but nothing about the merger changes that. It will continue to be a protection.

DR. ROGERSON: Okay. David?

DR. EVANS: So I think I heard something. I want to make sure that I heard it correctly. Because it might be something where we agree on.

So I think what I heard Mark say is that we agree that Comcast's position is that Netflix needed to pay a terminating access fee, either directly to Comcast or indirectly to someone else that had an interconnection terminating access fee deal with Comcast.

At least I think that's what I heard. So, let me continue and then maybe Mark can tell us whether I misunderstood that.

Getting back to David's point on the contract, it is absolutely correct that the way the contract is structured that there are **{{**

}}. The other thing to keep in mind with respect to both the ability to foreclose, which we'll get into when we talk about the vertical theories and also the ability to raise prices directly, the horizontal effects.

There are other ways that Comcast going forward in time, despite the contract, can impose those costs on Netflix. For example, it can impose data caps. And it can -- which we'll get into later and I don't want to get into it now. But there are a variety of tactics that Comcast can engage in that have the effect of shutting off access between OVDs and subscribers that it can also use in order to, in effect, renegotiate and impose prices.

There's a bunch of other details in what Mark said that I don't -- I'm not going to take on right now.

DR. ROGERSON: This is -- yes, this is an important issue. So I heard you say {{ }} was almost nothing. And I heard you agree with it. And then say, but it could be way larger in the future. And then -- right? Is that --

DR. EVANS: Well, I want to be -- I want to be careful on the {{ }} is almost nothing.

DR. ROGERSON: Yes.

DR. EVANS: So, is {{ }} to Netflix, but you have a whole bunch of OVDs that are potentially facing these kinds of fees. And put aside whether it’s going to go up in the -- whether it's going to go up in the future.

You have an expanding OVD business. So is this an amount of money that you'd want to take into account in a merger case? Sure.

You have basically the business side of the market that's buying an input. And we have fairly strong evidence in this matter that the consequence of the merger is going to be to increase that input price significantly.

So you know, we can do the weighing later on, but the notion that we can simply ignore this because it's **{{ }}**. I mean, I don't know merger analysis that is ordinarily done that way. It's a chunk of change as to one company. There are lots of other companies. And it's going to be an increase in price.

You know, it has to be balanced obviously against efficiencies which we'll -- can talk about later. But I don't think there's any reason to take the **{{ }}** here and the other you know, **{{ }}** being charged other OVDs and dismiss that as trivial.

I firmly believe that the **{{ }}** is not reflective of the true price. But I'm not ceding that that price, by itself, gives Comcast a free out here.

DR. ROGERSON: I think we've reached a stalemate. But I'm happy -- I think everyone said their piece. Is that right? On this issue?

DR. ISRAEL: Can I just answer the question that was asked? I mean just because David directed a question -- I mean, David directed a question at me.

DR. ROGERSON: Yes. Yes.

DR. ISRAEL: I mean, I don't disagree that Comcast with Netflix -- Comcast and other ISPs with Netflix and others have negotiated with them in order to you know, charge a -- in order to charge a fee for traffic that was coming onto the last mile of the network.

I don't disagree the negotiation was over Comcast's view that Netflix should pay Comcast something. I don't know if we're going to do it now or later, you said we would talk about the economics of two-sided markets.

DR. ROGERSON: No, actually we're getting there. That's actually the next topic.

DR. ISRAEL: So I don't disagree that Comcast's view here was that that side of the two-sided market, that it was -- as they tried to figure out how to pay the costs of all this traffic that it was efficient. And their view they should charge some price to that side of the market.

DR. ROGERSON: Good. Okay, well I think we've really discussed this issue. So that's great.

Let's move onto two-sided markets. In particular, Professor Israel has suggested that although there could be higher prices -- higher interconnection prices might actually be desirable in some ways.

Number one, they might provide desirable signals to ISPs that are determining how and where and how much traffic to drop off on Comcast. And number two, even if interconnection prices rose, the seesaw principle suggests that the monopolists charging higher interconnection prices might at the same time find it more profitable to lower its broadband prices.

So, how have I done? Expand on it. And then I want to hear the other side respond.

DR. ISRAEL: So you've done well. I mean I think --

DR. ROGERSON: That was the right answer.

(Laughter)

DR. ROGERSON: So you've done well too. Okay, we really are cooking here.

DR. ISRAEL: I think that -- I mean, again as I said before, I think David's numbers he presented with a specific cost make it a little more concrete. Which is just that the **{{ }}** or whatever we call it, what that says is every time a bit of data, a megabit per second, but I'll call it a bit of data, goes from Netflix to Comcast, there is a cost to Netflix of some amount per megabit. Right?

I mean, there's a {{ }} actually. So the {{ }}. But accepting that there is some cost that goes -- some money that goes from Netflix to Comcast. So that's a positive cost to Netflix.

That exact same number is exactly the same way as a negative cost to Comcast. Comcast -- every time a bit comes, Comcast receives some money. And so there's a negative cost on that side of the market.

In Joe's first report he put in a simple model, which you know, we can debate. But I generally agree with. It says now there's a positive cost on one side and a negative cost on the other. There's a pass through rate on each side. And what happens, consumers have to buy both of these subscriptions.

So what happens to consumers on that depends on those relative pass through rates. Then we don't have any real -- I don't think any of us have put in exact estimates of those. But it's exactly a positive cost on one side, a negative cost on the other.

So seesaw principle makes it sound like two-sided markets are -- it's just that there's a pass through rate on a cost on both sides of the market.

The other thing I agree, and I think everyone here agrees with the idea that in some cases, you want to charge either side of the market. There can be reasons to charge one or the other.

Among the reasons, you might want some cost at least on the edge provider, Netflix side of the market, as they make decisions about how to shape their business. And if they internalize some of those costs, that might help them more efficiently think about those costs and how they structure their business.

It might also be that there are --- you know, there's a lot of academic work on this topic that certainly reaches the conclusion that there are lots of situations in which it makes sense to charge the edge provider side of the market. More generally that there's no general principle that you shouldn't charge that side of the market.

And I think the way I would characterize it is it's a -- we're all trying to find our way to the right way to pay for all this traffic. It's you know, the market's going to have to work itself out in terms of which side pays.

But again, it's a positive cost on one side, a negative cost on the other. And there's no obvious, direct reason to think that overall prices to consumers go up.

DR. ROGERSON: Okay. Well, I'd like to hear what Joseph Farrell has to say on this? Being a fan of a lot of your theory over the years, it seems like a good subject for you to propound on.

DR. FARRELL: Well thank you Bill. So, let's see, there's quite a bit here. Let me start with the seesaw principle.

So the seesaw principle basically says incremental revenues per subscriber that come from terminating access charges have the effect on consumer side pricing, comparable to an equal reduction in marginal costs. That's solid and I agree with that.

The estimate in the literature for MVPD pass through rate from Ford and Jackson, which was a while ago now. This was cited I think by Greg and Mike Topper in their report. It's about 50 percent. So, substantial, well under one seems to be kind of a lesson from that.

So if we look at the effect of an increase in terminating access prices minus the pass through effect, just taking the simple seesaw model, the single ISP approach, then you'd say the seesaw principle significantly reduces. But it doesn't come anywhere near neutralizing the effect of an increase in price.

If you look at the model that I proposed in my declaration, you pointed out that I didn't do an explicit calculation of overall consumer impact. Obviously that was left as a simple exercise for the reader.

(Laughter)

DR. FARRELL: Just in case -- just in

case there are any readers here who didn't actually do the exercises, if you pursue that model, then it comes out as a simple comparison of R versus A. That is of the two pass through rates.

If you're thinking about an ISP with market power, with a pass through rate estimated in a slightly different context at around 50 percent, and you're thinking about a pretty competitive constant marginal cost content industry, probably pass through rate close to 100 percent. That would tell you, I think, that you'd expect net consumer harm there.

You point out, Mark, that we don't have a clear theory that says zero is the right price. And I agree with that. The question I think is not can we say what the right price is and depend -- defend against departures from it, the question is can we identify what the welfare impact of increases in the terminating access fee are likely to be.

And that's of course closely related to do we think there's reasons to think it's biased downwards or biased upwards? If you look in the interconnection price literature from the more conventional -- well, from the telecom literature, Jean Tirole and various co-authors have studied this.

They suggest that the bias is in the direction of too high a price on the side -- excuse me, too low a price on the side where there is more market power. And I think our discussion of market power in consumer ISP markets suggest to me at least that there's likely to be more market power there than on the transit providers serving the content industry.

The other bias, which points in the same direction, is the one related to price coherence and externalization of costs and taxing rivals. And again I think after a -- after an early modern history starting with Rochet and Tirole in 2002 where people stressed the point that it's not obvious how you do the welfare analysis and whether interchange fees are likely to be too high or too low.

I think if you look at the recent

Bourguignon, Gomes and Tirole paper or at Julian Wright's more recent work, let alone at my article on this, you see, I think pretty good reasons to believe that there's going to be a tendency for them to be too high.

And so that's why although I accept some of the things you say Mark, about it not being obvious what the right level is, I do think there's apt to be a bias in the direction of overly high terminating access charges anyway. And because I believe that the evidence shows that you tend to get higher terminating access charges with ISP size, it seems to me that's the fundamental theory of harm here.

DR. ROGERSON: Okay. Well, that deserves a response.

DR. ISRAEL: So let me just take a couple and Dennis might have a comment too. Well I think we're agreeing that ultimately what happens from this **{{ }}** or whatever that goes back and forth, comes down to pass through rates on each side of the market. At least as far as the effect on the combined price.

I guess that little place that I disagree is with the idea that Netflix is operating in a perfectly competitive market where we would expect its pass through rate to be one. I mean, I think given Netflix's share of the market in OVDs and given Netflix, you know, having exclusives on certain content, I'm not going to speculate on precisely how competitive. I don't think it’s perfectly competitive.

At which point we know there's no general relationship between sort of which side we're arguing has more market power and what the pass-through rate would be. So I don't think that we have any basis to say Netflix's pass-through rate is one. The stuff on the ISP side is quite old.

I don't think we're in a position to say which of those pass-through rates is bigger or smaller. So we end up with a cost on each side that's offsetting. You can debate about which pass-through rate is bigger. I don't think we know.

I think we do know that when the -- when this fee was charged to Netflix, it indicated it had no effect on its margins, and no effect on its operations. So Netflix --- either it was too small or it didn't pass it through. But Netflix seemed to indicate it didn't need to react to it.

As far as the theory, I am smarter than to engage in a full debate with Joe Farrell about all things, at least the theory. But I think it's fair to say that there are a variety of papers on this specific topic and otherwise that point to a variety of reasons why it might be more or less efficient to charge one side or the other.

I mean another paper that you know, there are papers that -- by Glen Weyl and others that point to the shifting prices more towards the side that has more heterogeneity. And therefore a bigger Spence distortion. So that you sort of subsidize the other side to bring more quality into the market.

I believe the conclusion of that paper is it makes sense to charge relatively more to the side that has more heterogeneity. I would speculate that's the OVD side when you're comparing

Google and Netflix to very small OVDs.

But my basic point here is we -- I don't think we have any clear basis to say pass-through is bigger on one side or the other. Or to say that we know what the optimal share of costs are to one side or the other. Which leaves us with sort of a theory of harm that can't reach any conclusion.

DR. CARLTON: Can I just add?

DR. ROGERSON: Yes. Okay, very, very quickly.

DR. CARLTON: Very short.

DR. ROGERSON: Yes.

DR. CARLTON: You know, both Joe and Mark are talking about a two-sided market static, but the previous discussion which I'm not going to go through, before was that Mark was explaining there's an efficiency from the Netflix deal. Because you basically got rid of a less efficient transit provider. You got rid of a less efficient provider of the data, the transit provider. And that would be a pure efficiency.

Moreover, the effect on investment ---

it hasn't been discussed. In other words, what's kind of funny about this discussion, it's an interesting discussion in a two-sided market conditional on everything, but then it's ignoring Mark's earlier point that it's more efficient the Netflix's deal. Because Netflix is more efficient. It's getting rid of the transit provider.

DR. ROGERSON: Okay. So I'm going to -- you know, I think I'm really happy with especially the last part of the debate here.

I think we've moved the engagement forward. And I really, really wish that we could talk more about this. Maybe we're going to have time to return to it a little bit in a later panel. Because no one will have anything to say on any other subjects or thoughts.

But you know, we really should wrap up now. I'd like to thank the panelists for a really engaging debate. And we'll resume in ten minutes.

(Applause)

(Whereupon, the above-entitled matter went off the record at 10:53 a.m. and resumed at

11:07 a.m.)

DR. ROGERSON: Okay, well, thank you very much for joining us again. Jon Sallet was busy reorganizing the Internet at the start of our panel, and so we're going to have Jon just take a moment now to welcome to you all. So, Jon?

MR. SALLET: It's not precisely the reason. It's that when I realized the identity of the economists who are in the room today, it never occurred to me that a lawyer would be allowed to say anything.

Thank you, everybody, for being here, the economists, the experts of course, but I just want to say as well, the clients and the associations who devoted the resources to helping this come about. It's very useful to us, and let me just say, from a lawyer's perspective, why that is.

As we've said from the outset of this transaction, our goal is to conduct this transaction review by the book. That we would look at the facts and follow the facts wherever they go. We would look at the law, and of course, we'll look at the economic theory.

(Phone ring tone heard in background)

The stirring anthem is just for me. I was going to say, and find out where the theory and the facts and the law intersect so we can make the best possible decision.

It's why I appreciated in the first panel the discussion of both theory and facts because that's what obviously is going to inform our judgment the most. As some of you know because you've been at earlier fora like these, this is the third such meeting we've held in terms of as part of a merger review. I think it demonstrates how important it is to us that we hear from people who are at the top of the profession about how complicated transactions should be assessed.

We're also, obviously, very fortunate to have Commission staff, a lot of Commission staff, in the room. I won't be able to recognize everyone, but I do think the economists who are here who have been laboring very hard for the Commission on this ought to be recognized: David Waterman, the

Commission's chief economist; Bill Rogerson, who's leading this review; Paul LaFontaine; Shane Greenstein; others who will be moderating throughout the day, Tim Brennan; Eric Ralph, who's the Chief Economist of the Wireline Bureau; Andy Wise from the Media Bureau.

And, of course, we appreciate logistical support to help get us in the shape to have this from Janice Wise and Bill Freedman in our Consumer and Governmental Affairs Bureau.

There's one housekeeping matter that I need to mention because it justifies the presence of a lawyer here for a minute. Of course, just to state the obvious fact, this forum is only for individuals who have signed the appropriate acknowledgment and are permitted to view highly confidential information.

I know Bill mentioned that at the outset of the day, but in addition, because of the pendency of litigation, we will not be discussing so-called VPCI, certain levels of information that Hillary Burchuk, who runs the transaction day to day from

OGC, can help describe. It's information that deals with video programming agreements and the genesis thereof. Is that a fair --

MS. BURCHUK: That's a fair statement.

MR. SALLET: There are some of you people -- some of the people in the room have had legitimate access to that information through their clients, the applicants for example, but even there we ask that no one discuss it, and as I say if there are any questions about that, please -- Hillary is available to consult on it.

In any event, you've been more than kind to give a lawyer enough time to talk, and we'll turn it back to the economists now. Thank you.

DR. ROGERSON: Thank you, Jon. Well, let's get started. Very quickly, we have a couple of new faces: David Waterman, the FCC's chief economist and an expert, of course, on the whole video industry, is joining us for this session.

One new face, Professor Dick Schmalensee on the third parties, and Greg Rosston on the applicants' side. We know the rest of you, and I think we're all on a first-name basis now, guys, so good.

So let's get started. This session is on OVDs. The way I started last session I'd like to start this session; I'd like to give you at least one version of what I think the theory of harm is that we're discussing, to be clear.

I think the theory of harm we're discussing in this session is that Comcast views OVDs, particularly OVDs that offer live linear programming, as competitors to its own MVPD service. According to this theory of harm, the transaction will increase both Comcast's incentive and its ability to take actions that will disadvantage OVDs and thus retard or permanently stunt the growth of a competitive OVD industry.

Commenters have suggested at least four different classes of actions that Comcast might be able to engage in to disadvantage OVDs. We're going to discuss each of them. The four are:

One, degrading access of OVDs to Comcast's broadband network through raising interconnection fees, introducing data caps or other measured service plans, reducing the quality of transmission of OVD signals, or foreclosing access altogether;

Two, limiting the access of OVDs to third-party programming by negotiating restrictive contract terms with programmers;

Three, making it more difficult for broadband subscribers to access OVDs by denying OVDs access to Comcast's set-top box, inhibiting the growth of a competitive third-party set-top box streaming media platform industry, or limiting the extent to which Comcast will provide authentication to other websites or streaming media platforms;

And finally, four, limiting the access of OVDs to NBCU programming.

So, what I propose to do is discuss each of these classes -- particular issues have been raised with each of these classes of actions, and I propose to start this panel by discussing each of these classes of actions a bit and how the theory applies to them.

Just to foreshadow where we're going, although the applicants have particular criticisms and things to say about every single one of these, Professor Carlton also has some overarching theories about criticisms of the vertical analysis applied to this merger, and we're going to circle back to those after we've kind of gone through each of these classes of actions then come back to the overarching criticisms of vertical theories.

So I'd like to start with degrading access. Why is it that the merged entity will have a greater ability to degrade access? Let me pick data caps for instance. I think Time Warner could put data caps on now. Comcast could put data caps on now. What difference does the transaction make? In what sense is that increasing anyone's ability?

Take it away, guys.

DR. FARRELL: Well, can I start by clarifying your theory of harm?

DR. ROGERSON: Yes.

DR. FARRELL: So, you said OVD as competitors to the parties' own MVPD services either as a matter of interpretation or addition, I'd like to also say OVDs as inputs to potential competing ISPs, and so I'm concerned about the ability to undermine that.

Going to your specific question about ability -- yes, I don't think the combined firm will have any greater ability that I'm aware of to deny access to a particular subscriber in one of their -- to one of them than that one now has, but there's a sense in which you are degrading access more if you deny access or degrade access to more subscribers.

And I think that's -- if you're talking about the narrow ability technologically to do it, it's a question of what you define as more degradation.

DR. ROGERSON: So, is there a sense in which the post-transaction entity will have a greater ability to limit the growth of a competitive OVD industry by degrading access in some way?

DR. FARRELL: I mean, I think the simple model says yes. Right? So, if the limitation on the growth is by denying access to some millions of viewers, let's say, then a larger ISP can deny access to more millions of viewers and if you think that denying access to millions of viewers degrades the growth, then that's going to degrade the growth more.

Now, of course, pre-merger the parties could do that if they coordinated the denial of access, but there wouldn't be a simple way to unilaterally do that.

DR. ROGERSON: Okay. Do I have a response to that?

DR. CARLTON: I'll start. I thought your question is how the merger will improve the ability to foreclose, and I'm not sure I fully understood what Joe said. The incentive I think he said exists today under this theory. It absolutely does.

Now, it's true that if I have in Territory A an incentive to foreclose and in Territory B I have an incentive to foreclose, it's true if I merged the two companies I still have that same incentive, and yes, as a mathematical fact, I'm now foreclosing more people.

But, the simple theory as to I want to blow up a rival or disadvantage them because I don't want that OVD competing with my cable network. Just all else equal --

DR. FARRELL: Well, can I clarify? I was trying to narrowly stick to the question about ability without getting into incentives yet.

DR. CARLTON: Well, I guess I would say if I can do it now, I have the same ability -- I mean, I have to turn them off and --

DR. ROGERSON: Okay, Professor Schmalensee, do you want to take a shot at this?

DR. SCHMALENSEE: Yes, I -- I think where Joe was going but didn't quite get there is if your interest is in reducing OVD competition, then what you can do as a smaller ISP is pretty limited. You can cut off your customers. Let's talk about complete denial of service. You cut off access to your customers, but if they're a small fraction of the market, you don't affect that OVD's potential growth.

If you cut off a large set of customers, you can have a stronger effect. That's the sense in which there's a greater ability. There's also a greater incentive, because to the extent that a weaker OVD industry benefits MVPD providers, you capture a larger fraction of that benefit the larger a fraction of the industry you are.

So I think it on its face affects ability and incentive, not to foreclose, but to injure the OVD industry.

DR. ROGERSON: Okay. So, we'll come back to the incentive. I heard on the ability theory OVDs have national economies of scale, perhaps. So, denying a bigger fraction of the customers hurts them in a completely different way. So, please respond to that.

DR. CARLTON: I think for these foreclosure theories to make sense, you need to have some element of scale. And otherwise I'm not sure that they really make sense. But, if you think about it, the -- and I think this makes it clear

-- let's suppose in Territory A and B I now have an incentive to foreclose because I can get the benefit.

And Dick's point, and I agree, let's suppose there were some -- and your point -- suppose there's some scale effects so that they go down the tubes. Okay?

So they are now not in Hawaii. I don't know who has the -- some other territory. Okay? Why is that a benefit? It would be a benefit if Comcast sold something in that territory for which they could now reap market power, but there is nothing like that in this case.

So when you're selling complementary products -- when you're dealing with a complementary product that's only sold in your own territory, unless you have some other theory, the combined scale --

DR. ROGERSON: If it's okay, I was -- because I know that's one of your great arguments and I was trying to tell you we were going to get to that --

DR. CARLTON: Right. I won't -- but that's the response --

DR. ROGERSON: -- and I really do want to get to that. That's a great argument. I'd like to kind of stick now narrowly just -- I think I understand what increased ability means --

DR. CARLTON: But I don't. Then I don't --

DR. ROGERSON: -- and it would rely on the national economies of scale. Are there national economies of scale?

DR. CARLTON: No, but wait.

DR. ROGERSON: Okay.

DR. CARLTON: Even if I accept what Dick's saying, in Territory A I have the incentive to foreclose pre-merger incentive in Territory B for pre-merger and you combine them, I still have it. I can keep them out of my territory by assumption.

The fact that I'm blowing them up elsewhere in the world is irrelevant unless there's something else. That was my point.

DR. SCHMALENSEE: Well, the scale point says your weakening them -- the more customers you can deny access to, the more harm you do the OVD business and therefore the more you weaken that competition for your services, and obviously, we'll get into whether that's the right way to think about it.

But if you think that OVDs compete with linear -- with MVPD generally, then you have greater ability to harm that supply.

DR. CARLTON: That's out of my territory.

DR. EVANS: So, Dennis, I mean, just so I understand what it is you're saying here, if the world was such that there was -- there are two MVPDs, two national MVPDs, is your proposition that no matter what combination I make of MVPDs, whether it's those two combining together, whether it's -- we have an industry that consists of a thousand each with .1 percent and I combine them together, is the proposition that no combination of MVPDs and no aggregation of MVPD customers, accepting that none of them compete, that none of that matters and none of that can have any effect on the ability of those entities, smaller or larger, to impact the prices that OVDs have to pay to connect. Is that the proposition?

DR. CARLTON: Well, yes and no. I mean, I think it's good to narrow it just so we can focus on what are the underlying assumptions. If you have non-overlapping territories, all our --

DR. EVANS: Excuse me. Non-overlapping territories. This is a world where no cable system overlaps, and I'm describing a world where there are --

DR. CARLTON: Yes. Then --

DR. EVANS: -- a thousand cable systems, each is a monopoly in their areas, there's no overlap whatsoever.

DR. CARLTON: Yes.

DR. EVANS: I combine them together.

DR. CARLTON: Yes. So, let's take that case and we are abstracting from the other theories about bargaining and power that we were talking about earlier today. You abstract from those theories --

DR. EVANS: Why are we abstracting from those theories?

DR. CARLTON: Well, I'm trying to keep each theory separate. Okay? I'm happy to talk about the bargaining power theory, but I'm trying to do the foreclosure theory to make sure I understand what it is you’re objecting to, and I want to separate that out from do I need economies of scale? Yes, I think generally.

What else do I need? Do you want me to bring in bargaining problems? I can, but my point is unless you bring in those other problems, it's not a foreclosure theory.

DR. EVANS: So I have a thousand individual ISPs and one of those ISPs goes to an OVD and says I'm going to foreclose you.

DR. CARLTON: Yes.

DR. EVANS: The OVD says get lost. Okay?

DR. CARLTON: Now --

DR. EVANS: I have -- now the OVD that is the national OVD, it controls the whole country, and I say I'm going to foreclose you, can the OVD at that point say get lost?

DR. CARLTON: That's -- if I have two OVDs, I mean two cable companies with non-overlapping territories, they already within their territories have the ability to deny access.

They are the monopoly. I don't care if they are --

DR. EVANS: No, no, I get that. I get that, Dennis. I'm trying to --

DR. CARLTON: -- they can deny. So, therefore, if I put them together --

DR. EVANS: -- a thousand individual monopolies --

DR. CARLTON: I understand. Let me answer.

DR. EVANS: -- and merging them to one.

DR. CARLTON: So therefore, if I put them together --

DR. EVANS: Yes.

DR. CARLTON: -- they have no greater ability to deny access because to the people in those territory -- in their territories because they already have that ability. Post-merger I've not increased that ability. So therefore --

DR. EVANS: I've got it. So that's your story and you're sticking to it.

DR. CARLTON: So, wait, let me finish. So, therefore, in order for this theory, a theory of foreclosure, to make sense you have to put in, like Dick was suggesting, something about scale. But then even that's not enough, and that's my other theory. I don't want to, you know, steal the thunder, but you need something else.

DR. EVANS: Right.

DR. CARLTON: All I'm saying is you need something else.

DR. ROGERSON: Right, and all I want to do is discuss scale for a minute. Do you think there are national economies of scale or don't you and why?

DR. ISRAEL: Do you want us to go first

on that?

DR. ROGERSON: Yes, I want you to go. Well, I think -- yes. I want you to go first, but -- yes.

DR. ISRAEL: I mean, obviously, there are various theories one could advance on why they're a scale economy, so I hope we can have a little back and forth if there are other theories.

DR. ROGERSON: Yes.

DR. ISRAEL: I mean, the one that I've heard come through most clearly in some of the writings is sort of a fixed cost and content argument that if I'm smaller I might have more difficulty buying as much content, so I'll take that one as one to respond to, and I think this applies generally to lots of the theories.

I would point out a few things. One is that Netflix, Discovery, and others have been very, very public recently in saying they consider their content market to be a global market, not a U.S. market. So, to the extent there are economies of scale, I think the evidence in Netflix's recent statements, many recent statements, is that it's a global market.

There may be economies of scale, but certainly the relative share is much smaller of a global market. It's not clear to me there would be any ability to foreclose a global player.

Secondly, a great many OVDs, in particular the ones who function more like MVPDs, which is where I think a lot of the foreclosure discussion lies, pay for content on a per-sub basis, so it's not obvious to me there would be a -- that it's a fixed cost that would lead to big economies of scale.

And I guess the third thing I would say on that is we know a lot of the OVD action and the interest in OVDs is that they're offering sort of different little parts of the bundle or they're breaking things down or they're coming from the content providers themselves, so to the extent that you can go with one or two shows, or that HBO can be its own OVD, then I don't see how taking them out of some regions for a broadband purpose has any

-- limits their ability to provide that same content they're producing anyway online.

DR. ROGERSON: Okay. Professor Sappington?

DR. SAPPINGTON: I'd just like to say that I agree with point that we need some scale economies to make this argument work, but I think we have on the record an example in which the scale economies are documented.

So in the case that Roger Lynch has described in detail in his reply declaration, there is a situation in which DISH is experienced in OTT services based upon its Sling TV would not be dealt a fatal blow if it could not get access to just Comcast territory or just Time Warner's territory.

But you put the two together, they then have the ability to impose this fatal blow on Sling TV, which could fatally determine -- drive the OVD out of the market.

DR. ROGERSON: Comments on that particular study and how you would interpret its results? Or I guess the Lynch's description of the spreadsheets?

DR. ISRAEL: I mean, I talked about this once some before --

DR. ROGERSON: Yes.

DR. ISRAEL: -- so I can be brief. I mean, I agree -- the nature of the scale economies and that as I understand it is there are some fixed costs in the model that has to be overcome. In this case, it actually agrees with me that they are not fixed content costs. The content costs are variable per subscriber per month.

There are some fixed costs. The question is whether those fixed costs could be overcome without either Comcast or Time Warner subs. I agree that putting some fixed costs into a model is a form of scale economy that will end so you can think about whether they could be overcome.

Like I said before, I think what that model actually does is show that Comcast and Time Warner even together don't have such ability once one accounts for almost any subscribership by people between 10 and 25 megabits per second, or once one accounts for the fact that I think we mostly agree with that it wouldn't actually -- Comcast-Time Warner wouldn't have the ability to totally cut off all of their subs from DISH, but instead it would just reduce the numbers who get it.

In both those, I agree the fixed cost provides a source of scale economy. I think what that model actually shows though is even just looking at a domestic market, leaving out the global market that might get rolled into it, Comcast plus there would be plenty of open field available for Comcast-Time Warner not to have.

So it's not a theory answer. I agree fixed costs are a source of scale economy, but I think that model shows that it's not sufficient to create the ability.

DR. ROGERSON: I'm going to ask Professor Sappington to comment on that particular model and your interpretation of what it showed or didn't show.

DR. SAPPINGTON: Sure. These are based upon a particular circumstance of a particular company, so I don't want to claim this pertains to all potential OVDs, but again, it is evidence on the record that this is a realistic problem.

When you allow the two large ISPs to merge, they have the ability to impose a fatal blow, which they could not individually. So I think that's a merger-specific harm that we need to think about carefully.

And to Mark's point about the combined company would not be able to shut them off entirely, I don't understand why that would be the case. If they wanted to, they could just terminate the contract and say no, you cannot reach subscribers anymore.

As David has pointed out in his reply declaration, it's like an island and they control access to the island. If they want to shut it off, they can.

DR. ISRAEL: We should talk about what they would have to do to accomplish that.

DR. ROGERSON: Go ahead.

DR. SAPPINGTON: And in terms of why you

would need access to the 25 megabits, again, this is something the Chairman has said is needed, and I believe Comcast also tells its customers that in order to have an uncompromised viewing of streaming video, you need 25 megs or more.

DR. ISRAEL: So on the 25 megabits, I mean, I don't deny. I think Comcast agrees that we're all trying to move towards faster speeds. That's the motivation for the transaction. My only claim is **{{**

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But as far as why -- the turning them off point, it goes to the statements I've made in both my reports. DISH is distributing its OVD service via a CDN. So, the CDN provides a pooled set of content, delivers it to Comcast. So, if you want to turn them off, you've got to turn off the CDN.

And you can't turn off the CDN by literally turning off the CDN. You have to prevent that CDN from getting access to the Comcast network. Right?

What CDNs do is look a lot -- look at all available transit and connection paths to get into the network. So physically could they turn it off? Sure. But what they would have to do is deny that CDN access, which thereby means basically shut down all of their transit links to the broader Internet.

They can't just turn off -- once you distribute through a CDN, they can't just turn off DISH. They take the CDN content or they don't, and the CDN doesn't even need to have a direct interconnection agreement. The CDN can go through a transit provider. So, the ability to pool that traffic with effectively all of the traffic in the Internet means that to turn it off would effectively require cutting Comcast off from the overall Internet.

Maybe you can say that's technologically possible. I don't think it's real though.

DR. ROGERSON: Okay, so I think we've brought out the point we need economies of scale and I'm just going to leave it for now.

I wanted to turn to the other intriguing point that Professor Schmalensee made on incentives. I find it so intriguing because I think there's something to it. I don't know how important it is, but I think you hit the nail on the head on what the issue is. You mind just expanding on it for a second?

DR. SCHMALENSEE: Well, sure, and this comes to the point we'll circle back to of Dennis', as to whether one wants to think about OTT content, OVDs as complements or substitutes.

Now, **{{**

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Now, if you think that, and **{{** **}}** if you think that OVD is a threat and you think it would be nice if the OVD industry's growth were slowed down, well, any cable operator might think that, but the merged firm can capture much of the industry-wide benefits if it is able to slow down that growth.

That gives it a greater incentive. A little operator might have the same ability to slow access or drop it or reduce it and it might -- it would benefit the industry only a little and it would capture only a little bit of the benefits.

Comcast has the ability, the merged firm would have the ability, I believe, to slow the growth of the OVD industry substantially. I mean --

DR. ROGERSON: Right. So --

DR. SCHMALENSEE: -- Netflix may be able to handle **{{ }}**. It's not obvious that the smaller folks trying to grow could handle that.

DR. ROGERSON: Okay, so some of the commenters have referred to this incentive issue as internalizing geographic spillovers, and I don't know that that's the best word, but just so I don't have to repeat the whole minute when I turn over to these guys, what do you think about this issue that there'll be an increased incentive because of internalizing geographic spillovers?

DR. ISRAEL: So I'll go first. I mean, I don't disagree with the idea that there could be some internalization of geographic spillovers, but I don't think it fundamentally changes the nature of the core incentive debate because the core incentive debate is whether Comcast is better off because of some benefit to its video business or worse off because of a harm to its broadband business as a result of a foreclosure strategy.

So if you were to ask a specific in-footprint question for Comcast’s current footprint, you would say which of those incentives or harms is bigger? Is that positive or negative?

If you then add Time Warner's footprint in, you would then be internalizing either a positive or a negative number, but the answer to the core incentive question is: is it positive or negative by weighing broadband versus video, and the positives and negatives you're adding up don't change because you bring two different footprints together.

It's -- there have been previous things called big footprint theories, which I think the idea is there is only benefits as you add more areas and as you add those areas it increases the benefits and maybe you then want to foreclose.

A critical point here is the key issue is the tradeoff between video and broadband profits and that -- both of those costs and benefits scale up.

DR. ROGERSON: Professor Sappington? One more quick comment and then we're moving on.

DR. SAPPINGTON: Okay. First I just want to emphasize we can't ignore this externality in the footprint; it is important. But also just on the more focused point that Mark just raised there is a tradeoff there that Comcast would need to consider, whether it's worth sabotaging an OVD. But the data -- Comcast's own churn data shows that **{{**

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DR. EVANS: Bill, are we going to get to the vertical arithmetic later on or is this the right time to go into it?

DR. ROGERSON: You know what? I had it later, but -- okay, let's stop this now and just move on to a brief understanding what the elements are of these other classes of action. Okay?

The second class of actions was some commenters have said that the merged entity will be better able to limit access of OVDs to third party programming by negotiating more restrictive contract terms. Why would it have the ability to do that? Anyone? Presumably on this side of the table.

DR. SAPPINGTON: I think the answer is because now at its increased size it has more leverage and bargaining with third party programmers, and one way in which it might use that power would be to say look, I've got a competitor over there. He wants your products. Don't give them to him.

DR. ROSSTON: So, is this sort of a

theory that hey, they're bigger, they can do more restrictive contracts and I've looked at these contracts. There are -- in a lot of video contracts, there are things called MFNs and ADMs, and if you look at them, these things are not necessarily anti-competitive. An idea that you would like to invest in a program, you want to make sure that it's not going to be given to -- you want to invest in a long-term contract, you want to make sure you're protected from lower prices later, you want to make sure that you're protected from somebody else showing it for free the next day when you're paying for it -- these things are not necessarily anti-competitive.

But, beyond that, on these things that one might say -- you might think “hey, as Comcast gets bigger because of the merger, it might be able to engage in more detrimental contracts and freeze out rivals.” Right now, Comcast is governed by the NBCU conditions and does not have ADMs other than those that are expressly permitted under the ADM, under the ADM provisions of the NBCU order.

And they did not engage in these kinds of things before the NBCU order. These kinds of things are that you can't make it available for free for the next 30 days on the Internet. Those are sort of reasonable things.

If you think that size matters, you would expect that Comcast would have more restrictive covenants and things like that than Time Warner, and they don't. And Time Warner will be rolled into these conditions. So this fear seems to me to be pretty speculative and not aligned with the facts that are in place right now.

DR. ROGERSON: Okay, well I think the ball's back in your court.

MS. BURCHUK: Bill?

DR. ROGERSON: Yes?

MS. BURCHUK: Let’s move on.

DR. ROGERSON: We can't discuss --

MS. BURCHUK: Go ahead, I’m just -- I’m worried that you’re, you know, you’re starting to get into what’s in ---

DR. ROGERSON: Too close?

MS. BURCHUK: -- in the contracts. This comparison is too close.

DR. FARRELL: I can go all theoretical and get us away from it.

DR. ROGERSON: Okay. Joe, you are, I think, a really safe choice here perhaps.

DR. FARRELL: I don't believe I've seen anything that I shouldn't refer to, and if I have, I've forgotten it.

So, I would accept Greg's point that MFNs and windowing and such are not necessarily anti-competitive, but I also think it's clear that contracts that reference rivals in that kind of way certainly can be anti-competitive, and we would want to be concerned about that.

Question is can a dominant firm credibly and profitably construct a web of contracts with perhaps multiple suppliers of let's say programming that limit the extent to which that programming is available to the dominant firm's rivals.

And I think there are two points to be made here and again, I'm not going to refer to any specific contracts because I don't know. One is with a bigger footprint you have a stronger threat point against the suppliers of programming and so it might, I think, be easier to negotiate contracts on that basis.

The other thing is in the economic theory literature, one of the key problems for a dominant firm trying to engage in such a monopolization strategy is the fact that in general if you sign a limiting contract like that with one programmer, another programmer who hasn't yet signed that contract is put in a better position.

So in technical terms there's what's called a positive contracting externality on non-participants. When you have a must-have partner, then that positive contracting externality becomes a zero contracting externality because the programmer who hasn't yet signed is still in a -- still has a zero reservation value, and that's not affected.

Whether that's important here, I don't know, but I think it could -- some version of it could well be relevant.

DR. ROGERSON: So the challenging question I'd like to ask you guys, can you respond to that without stating any facts?

DR. ROSSTON: Without putting any specific facts relating to contracts. First is I think Joe's theory is contracts referencing rivals, well, there's -- the -- I can reference the NBCU conditions, I assume that those are public, that those are there and that sort of ties the hands right there.

The other is that your idea that I think we'll discuss this afternoon which is the idea of how much does a programmer need -- How much of an open field there is? And there's a wide open field for programmers. There is lots of availability and we'll talk about that a lot this afternoon. So I think those two things are facts that I am referencing, but they are legitimate facts that I can say publicly right now.

DR. ROGERSON: Right. I think we have to stay away from factual issues regarding contract terms of particular providers.

DR. ISRAEL: I mean, I would refer to facts sort of outside the contracts and just realized outcomes. I mean, a lot of the discussion that we've heard throughout has been that Comcast has tons of market power now and would have some incentive to do this now. I would argue that if Netflix is the leading example of an OVD, they're not lacking for enormous amounts of programming, much of which is exclusive to them, others of which is not.

They've produced their own exclusive content. NBCU is making exclusive content for them. I don't think there's any evidence in the marketplace that Netflix or say DISH, who's got ESPN, that they have had trouble getting content to launch their programs -- or to launch their OVDs.

To the extent they produce some exclusive content, that's the pro-competitive side that comes out of some terms. So leaving aside the detailed complicated facts of the contracts, I don't think there's any evidence in the marketplace that this content has been a problem.

DR. ROGERSON: Professor Sappington?

DR. SAPPINGTON: This is probably a question for Hillary. Are we allowed to address issues that are, I believe, in the public record before the Commission regarding NBCU programming issues?

MS. BURCHUK: If they’re in the public record. Which public record? This one?

It’s probably best to stay away from them.

DR. SAPPINGTON: Not in this particular case but --

DR. ROGERSON: Okay, well I think we at least know --

DR. SAPPINGTON: I'm sorry, just a general point, I won't have any specifics with it, that I think it's a mistake to rely entirely on NBCU conditions to think that protects the entire market and all the problems that might arise because problems have arisen and are likely to do in the future also.

DR. ROGERSON: I think that's an okay subject. I don't mean because -- I mean, that doesn't impinge on any of the VPCI, so I think if you wanted to mention a specific, I think all these are on the public record.

DR. SAPPINGTON: So, in particular, the Bloomberg issue and also Project Concord. Two examples in which seemingly were covered by the NBCU conditions, but it took three years to resolve the Bloomberg issue, and it took a year to resolve the Project Concord issue, by which time that OVD was dead.

So I think we can't rely upon these conditions to say there's no potential problem here.

DR. ROSSTON: I think the lawyers will talk more about these issues, but my understanding was Bloomberg was an interpretation of the FCC issue, not an ADM issue -- and they have resolved it, but Bloomberg is doing fine and it was a channel placement issue, not a contract restricting rivals issue.

What we're talking about here is

contracts restricting rivals, and that has nothing to do with that as far as I could tell.

DR. SAPPINGTON: Well, I think the more general point is that we really can't rely on those conditions to resolve all the problems which -- perhaps I misheard you, but I thought that's what you were suggesting.

DR. ISRAEL: I think Greg said the conditions help but NBCU had shown no evidence of engaging in this behavior, particularly extensively prior to any conditions.

DR. ROGERSON: Yes, and that we can't talk about. All right, so I think we're going to move on. Okay? We've tiptoed around that enough. At least at a theoretical level we understand what the issue is and we need some more facts.

And apparently, we really could benefit by having some more facts in this, and I hope that they become available to all of us at some point.

Okay, so the third class of actions that the theories discuss is that perhaps the combined entity would have a larger ability to affect the set-top box industry in ways that might damage the set-top box industry and perhaps go on to then damage the OVD industry.

Professor Schmalensee has filed the most extensive remarks on this, so I'd like to start by asking him to explain the theory in a little more detail and then, of course, I'm going to ask for a response.

DR. SCHMALENSEE: Well, this is an interesting and unfamiliar part of the world for most of us, but when you look at it, the contrast between Comcast's strategies and Time Warner's strategies is dramatic, and the fact that the merged firm would apparently adopt the Comcast strategy, or at least there's some serious concern, points clearly to a reduction in innovation and a reduction in access.

On the Comcast side, Comcast has invested a lot in developing its X1 platform, and Comcast plans to roll it out as far and wide as it can. There are documents -- internal documents discussing what the X1 platform should implement.

There's one that says well, **{{**

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Time Warner, in contrast, had worked with a variety of set-top box manufacturers, in some sense stood out from the industry. The one that I've looked at most recently is **{{**

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{{ **}}** had come up with an apparently, I don't know the details, an apparently very innovative design. **{{**

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Clearly, if the merger goes through, it

will not have access, and as far as I can tell, that -- maybe there are other factors. I don't know the details of the business. It **{{**

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So you have one company interested in promoting its platform and another company which hasn't made that investment that's engaging with a variety of set-top manufacturers, investing in them and encouraging innovation. That strategy will change and access to that set of customers will be reduced, making it harder to be in the set-top box business.

DR. ROGERSON: Okay.

DR. ISRAEL: So, can I -- I would just like to address the specific document that was referenced.

DR. ROGERSON: Sure.

DR. ISRAEL: So I know the document well. **{{**

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And so, I mean, not surprising to me on sort of every decision about what to put on a set-top box or what programming to consider or whatever. There is debate inside the company. So I would say if it's one person and not a consensus view, I think that greatly limits any inference we can draw.

More to the point, and don't take my word for it; look at other documents, but from my preparation and discussions with Comcast and the people, Marcien Jenckes and other people who run the video and broadband business, believe their documents would support that their view is that Comcast should be in the business of providing all possible content to its customers so that it can sell that to them and make a profit, which is the idea of why they don't want to foreclose.

So I think if you sort of look at the documents more broadly, you would see that Comcast is actively trying to push more content that it can sell to people. {{

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I would agree those discussions are commercial debates that are ongoing. Not surprisingly, those are complicated terms to work out, but if you look at it in the broader set of evidence, and we'll talk more about, about the content that NBC is giving to OVDs, the dealings with Netflix I'm sure we'll talk more about.

I think it's fair to say Comcast is trying hard to get more OVD content to its customers and as part of that is **{{**

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DR. ROGERSON: Professor Schmalensee?

DR. SCHMALENSEE: **{{**

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DR. ROSSTON: So, maybe I'll take on it. I think that we're starting to talk about the set-top box and X1 -- Comcast invested a lot and this is a big innovation. I actually do not have an X1 box; I have a normal, old Comcast cable box.

I still can get Netflix on my TV. I could get it through my Apple TV, which I do. I could get it through my television. I could get it through a whole variety of mechanisms, so withholding the Netflix app from X1 doesn't seem to me to be a huge detriment.

It allows people - there are many ways people can get these things. Plus the set-top box innovation is there. You can -- I can get a Roku if I want. I can get an Apple TV if I want. I can get a TiVo if I want. All these things are there just within the Comcast system, but not only that, Comcast has to compete with DirecTV's box, DISH's box, Verizon's box, and so it's hard to believe that that's a problem.

Also, the boxes are a worldwide market. This is not something that is just U.S. People are doing it. Finally -- X1 is a -- X1 works on a number of different set-top boxes. It doesn't work only on Comcast set-top boxes; it's not just Comcast manufactured set-top boxes. It's an operating system on the top, so to get this problem for set-top box manufacturers and to have a real competition issue on set-top boxes and forestalling things requires a whole bunch of different steps that don't seem to be evident.

DR. SCHMALENSEE: There are really two issues here. One is access to OVDs, and I think it's uncontested that it's easier for customers if it's one box.

DR. ROSSTON: It's easier, but not much different.

DR. SCHMALENSEE: I get Netflix, too, on

a Roku and it's just swell, but I push 27 buttons and use several remote controls. The Comcast document that said **{{ }}** I think is absolutely right.

That's not a foreclosure argument, but it does slow down. But the other thing is innovation in set-top boxes. Time Warner was working with a variety of set-top box manufacturers to have that one box. Not to have two boxes but to have the one box, and yes, there is a worldwide market on that to some extent, but there are different standards and different requirements globally.

So, you have one entity that's encouraging set-top box innovation, another entity that isn't. The large entity that isn't will be the dominant entity in the merged firm.

DR. ISRAEL: I'm not sure what we mean to say Comcast isn't encouraging set-top box innovation. X1 is an enormous set-top box innovation and then direct efficiency to customers to have a better set-top box to work with.

DR. SCHMALENSEE: This is Apple versus Microsoft, right? Microsoft encouraged hardware innovation. Apple put it in-house. Comcast, and I've seen the documents, they love X1. It's a major innovation and why would consumers ever want anything else?

Well, the Time Warner thing is we like to give our customers . . . a number of documents say **{{**

}}. In terms of set-top box innovation, the Time Warner approach is going to get you more innovation by other manufacturers. I'm not saying Comcast hasn't innovated; it has. But it's just a different story.

DR. ISRAEL: My only point would be I think the efficiency and the innovation benefits should be accounted for and Greg's point about the worldwide market is there are others continuing to innovate in set-top boxes around the world, both for cable operators in the U.S., for telco, for DBS, and for worldwide operators. There's a pretty active market in set-top boxes.

DR. ROGERSON: Okay. Well, I think we've reached closure on that. Good. Excellent. Very nice discussion.

DR. SCHMALENSEE: Of a sort.

DR. ROGERSON: Yes. Well, no. I think -- I didn't say we all agree, but I think everyone said their piece as best I can -- unless someone has something to add on this. Good.

The final class of actions, and we probably don't have to talk about this too long, is NBC -- potentially or the alleged theory is that the combined entity would have a bigger incentive or ability to deny NBCU programming to OVDs.

And as I understand it, this is just a plain vanilla program access issue theory. Does anyone want to add anything particularly compelling on either side to this right now? Yes?

DR. ROSSTON: I think we're going to talk about this a lot this afternoon, and the evidence is that we'll see this afternoon that OVD and OTT diversion to Comcast is probably lower than it is for DirecTV and DISH and other MVPDs that are more direct competitors.

DR. ROGERSON: David?

DR. SAPPINGTON: I would just like to say that if you have another event like this in the future, I'd be happy to come and talk about it, but in respect to Hillary's concerns here, I don't want to talk about the DISH case at the moment.

DR. ROGERSON: So once again we've reached the point where it would be nice if we had access to a few more facts here. Okay, we'll leave it for that. So now I want to turn away from discussing the individual details and move on to Professor Carlton's overarching criticism of a lot of vertical theories.

There's been some internal debate about whether you have two theories, Professor Carlton, or one. And I've gone back and forth and now I decided you had one but now hearing you today, maybe you have two. But I'm going to present it as one, okay?

So forgive me if I ultimately got it wrong. So here's my version, but then you clarify, okay?

So long as Comcast and OVDs can sign sufficiently complex contracts, Comcast should never want to disadvantage any OVD because the OVD services are complements to Comcast's broadband service.

Comcast and the OVD can always agree to an arrangement that left them both better off where the OVD paid Comcast a fee in return for Comcast's agreement not to disadvantage it.

Professor Carlton notes that in some instances a contract may be difficult or impossible to sign. He thinks that one such case occurs when a vertically integrated firm is attempting to extend its market power over a larger region.

However, when the motive for a vertically integrated firm to disadvantage a rival is simply to gain more market power within its existing region, Professor Carlton believes it's much less reasonable to argue that a vertically integrated firm would ever want to disadvantage a rival.

How would you grade me on that?

DR. CARLTON: That was pretty good.

DR. ROGERSON: Okay. So, you're making this out of market observation but it's closely tied to your theory that they could sign a contract that would make them both better off?

DR. CARLTON: Yes. I mean, really the simple point is when you think about broadband, and again, I'm abstracting from competition, so let's assume we ignore everything Mark has said and there's no competition, okay? That's the easiest way for us to analyze this.

Since Comcast is selling broadband and broadband and OVDs are a complementary product, it's in the interest of Comcast to -- in order to make its product as desirable as possible to allow consumers to have the ability to use the most desirable OVDs.

And the vertical foreclosure theories say well, wait a minute. You're ignoring the fact that if it made life difficult for an OVD to get to a consumer, the consumer would have to watch cable

TV and have you ignored that?

And the point is that if consumers really want to watch the OVD, then there's a deal that can be struck that would make both Comcast and the OVD better off and the simple reason for that is that it's a complementary product.

So what happens then when you look at incentives to foreclose is you have to take that into account. Now, just stated as I have there's no advantage to foreclose if you can reach a deal with the OVDs through a contract. And these contracts often are quite complicated so you think these people have the economic incentive, there's no question, they have the economic incentive to do this.

And if you really want to look when these foreclosure theories make the most sense, let me just give you an example and this example is an example Rob Gertner gives that I like a lot, and it's based on sort of Winston's stuff and my stuff with Waldman.

And it's this: Let's suppose you're the

only hotel on a resort island. You have a restaurant, and there are a lot of natives who work on the island who also have restaurants. When customers come to your hotel, you're obviously the monopolist of hotel rooms but the guests can eat anywhere, well, do you have an incentive to tie the two products together?

And the idea is if you tie the products together and you force your hotel guests to eat in your hotel restaurant, you already had power over your hotel guests, so you're not going to get much out of that.

But, if there are scale effects and you can blow up the other restaurants as a result, now all the natives have to come and eat in your restaurant. So what you've done by this is you've gained market power over someone you wouldn't have had market power over. That is the clearest case when you're looking for incentives for foreclosure.

That's what you want to be looking for. By foreclosure, by harming someone, by blowing someone up, do I want -- do I gain market power over some people that I wouldn't have had market power over?

That seems to me what you want to focus on and given the structure of this industry as I talk about in my affidavit that's not what we're talking about. So then you're left with this contracting stuff, and there I think the right way to think about it is as follows.

The economic incentives are clear. You want to overcome doing something inefficient. Do I agree that there are models in the literature in which you postulate a contracting inefficiency and therefore because you can't contract you do the foreclosure? Absolutely.

But those models are very fragile so the footprint, as long as you do what I was talking about when I was talking to Dick about just in your own territory you have the right to foreclose, you have the right to foreclose, and even if there are these scale effects he was talking about, as long as you can write the right contract, it's always in your incentive to not do that except in this case that

I gave where you have some out of market competition with the OVD that you've now blown up, that you've eliminated.

Then you can gain market power over groups of people that you don't have power over. But if I assume you're a monopolist in your own territory, you're the only broadband guy, you already have power over all those customers to extract it. So that's the basic theory.

So the basic theory is when you look at this, it's not one of those cases where foreclosure's a real worry. I've written on this and I take foreclosure seriously. What I'm saying is the facts of this case, put it out of that element and now we're in this contracting assumptions about transaction costs, and results depend on the game you're playing and that can go either way.

So, the powerful theoretical results for foreclosure aren't here and what I do is I always want to ground that in the facts of this industry where people are talking about foreclosure, talking about foreclosing Netflix from that example, and

I say well they didn't do it. I mean, Netflix is in.

And let me just point out as a last -- this'll be my last comment, just a footnote. When we talk about scale economies, people seem to think that you can sometimes be misled into thinking that's affecting your marginal costs. Maybe it does, but if we're talking about fixed costs and whether you're in or you're out of the industry, if there are fixed costs, scale can affect whether you survive or not.

That I agree; it can affect your average cost, but if it doesn't affect your marginal costs, it's not even going to affect competition, as long as the firm survives. So that's just a footnote that sometimes gets lost in these discussions. But I'll stop there.

DR. ROGERSON: Okay. Probably no one wants to respond to that, right? Wait. Professor Farrell?

DR. FARRELL: So, Dennis is certainly right that if you have an OVD that is providing let's say programming that consumers like more than the cable programming then there is a bilateral incentive to contract rather than foreclose, but I think it's illuminating to think about what that contract would look like.

So, if it's the case, as it is, that the cable companies charge quite a lot of money for cable programming, then in order to be sure that this contract is bilaterally efficient as opposed to just jointly beneficial, you would have to essentially charge an access charge that is in the range of ECPR, in other words, the variable profit that the cable company makes on cable programming.

That's the kind of access charge for an OVD that is way out of the range of the kind of thing that we're talking about I think with Netflix, and it's not at all clear to me that the Commission would or should regard that as a desirable outcome if cable ISPs were to charge that kind of terminating access fee for OVDs.

DR. EVANS: But that is the horizontal effect. That is the horizontal effect. So, under

Dennis' theory -- I'm sorry to interrupt. Why don't you go ahead and I'll get to this.

DR. FARRELL: So, I think in terms of bilateral contracting --

DR. ROGERSON: Okay, well, you did my job as well as his, so that was great.

DR. FARRELL: In terms of bilateral contracting, "Yes, but" I think would be my observation. In terms of conditions for a foreclosure theory, I take your point that there are conditions and we need to pay attention to that.

Your phrasing about market power over customers you don't currently have market power over doesn't resonate for me. For example, suppose you have a dominant incumbent ISP who can by either foreclosing or contract make a popular OVD less willing or less able to work with a competing ISP.

So you said you were abstracting from this. You were, I think, and then there is potentially an incentive to do either foreclosure or restrictive contract to prevent that. It doesn't seem natural to me to say you've gained market power over customers that you didn't have market power over before.

I would say you're reinforcing or preserving market power that you had over customers before. If you're in that world, so no longer abstracting from competition, then is there still a bilateral contract that does the same thing? Yes, there is, but it's a bilateral contract that would say not only do you have to pay this ECPR level access charge, but you also have to promise not to deal with rivals. And that would be, I think, potentially a trigger for concern.

Finally, let me just comment on the framing of this as foreclosure. So, sometimes I think there can be an incentive to foreclose, especially when you couldn't or wouldn't sign that high-price and restrictive practice contract.

It's also true though that even if all that's happening is a dominant incumbent is less unhappy if foreclosure is the accidental result of a breakdown in negotiations, then that's going to change the bargaining positions. And so in negotiating for a payment, they may be more willing to engage in either unintended degradation or in brinkmanship about possible anything up to foreclosure.

But my main point really is Dennis is right. There are typically bilaterally better contracts, but if you look at what those bilaterally better contracts are, especially if part of the goal is to deny a popular OVD to an ISP rival they would not look very appealing and so I'm not sure quite where that takes us.

DR. ROGERSON: Yes, go ahead.

DR. CARLTON: If I could briefly respond.

DR. ROGERSON: Yes.

DR. CARLTON: First, I'll respond to the theory in a second, but I think really the proof is in the pudding. These incentives should exist now. Netflix has been put as the example of how we're doing it, of how Comcast is doing it, and if you look at that -- what is involved with Netflix and that contract as I said earlier today, the **{{**

}} relative to the benefits we're going to talk about in Panel IV, so it doesn't seem like a problem and Netflix doesn't -- is as I understand on the record saying that's not a problem.

But from a theory --

DR. EVANS: That is the surplus splitting --

(Simultaneous speaking)

DR. ROGERSON: You know what? I'm going to let you speak next. Just, yes, finish your comment on the theory --

DR. CARLTON: But let me just finish. But just on -- to go --

DR. ROGERSON: -- and you're definitely going to get your turn.

DR. CARLTON: -- to what Joe was saying, so Joe was saying suppose you introduce some competition. How do things change? Things get a little more complicated, and I think there's actually a model like that. I mean, that's what the original Ordover-Salop-Saloner model is.

And here's what's interesting about that model in the context of what Joe is saying. First, that is -- that does postulate inefficient contracts as their starting point.

Second, in terms of the contracts between, and you were getting at this a little bit, between the small ISP and then its ability to contract with the other programmers, they should in a sense form their own contracts for putting that aside.

If you look at the OSS model, the Ordover-Salop-Saloner model, those results -- that's exactly what I was referring to when I say the results of those models are very fragile because it depends on the inefficiency of each type of contract and it depends on what game they're playing.

So if you redo that whole model and just change one assumption, I can't remember -- I think they're Cournot in there -- if you make them play Bertrand, just a tiny change in strategy, the results are overturned.

So, I don't disagree as I say in my -- as I said earlier, that you can get foreclosure theories. It's just they're not compelling and they depend on knife-edge assumptions that we have trouble verifying or not and that's why I thought -- think the empirical stuff is important.

Now, in terms of the payment that you were mentioning, the payment that -- the **{{** **}}** to the benefits -- in terms of the payments and, again, the bargaining issue, I didn't make this point earlier, but whenever we're talking about bargaining, putting aside how the surplus is split mattering, obviously, to the individual parties, what really matters from an economic point of view is how does it affect efficiency and how is this affecting incentives in producing the underlying asset?

So, if we're talking about foreclosing Netflix, it must be also what we're worried about as economists as we're somehow reducing their incentive to buy content. And then you're back in the content market and that's what I was talking about earlier about are you really saying that you think there'll be less content and that's where the inefficiency is.

DR. ROGERSON: Okay. Professor Evans, I'm going to ask you to speak and then Professor Sappington. Oh, okay. Yes, those two and then we'll see where we are. Okay?

DR. EVANS: So, thank you, and sorry for being so anxious to speak. And Dennis, let me just say that the island tennis club example I love it. I've been teaching that for years. That's a great contribution.

DR. CARLTON: You know, I should just add there's actually -- I was in New Zealand talking about this and there's a case in New Zealand like that. I'll send it to you.

DR. EVANS: Is there really?

DR. CARLTON: Yes.

DR. EVANS: That's great.

DR. CARLTON: Yes.

DR. EVANS: Okay. So, at the risk of treading over ground that we've just gone over, so

Dennis' non-foreclosure theory is everyone is kumbaya and Netflix and Comcast get together and they negotiate a -- or other OVDs and they negotiate a mutually profitable contract and that's a possible outcome.

So let's assume that that's the world we're living in. If that's the world we're living in, that is, as Joe says, the world where Comcast is going to want to make sure that it gets enough of the surplus to compensate for the losses it's going to make on its MVPD business.

So, that's the split you're going to see. And that, in fact, is the split that I would encourage the FCC to look at on the horizontal theory. So if you're thinking about what the impact of the transaction is going to be, it's this world where Comcast is doing exactly what Dennis has described. Not foreclosing, not engaging in any of the stuff we're talking about there, but simply trying to charge higher access fees to OVDs as a result of the cost that it incurs.

That's a horizontal effect and that is

in effect the -- an estimate of how much Comcast would like to raise these access prices up to. So I think before we get into any of the foreclosure stuff, I mean, that is a possible state of the world.

But, --

DR. CARLTON: David, could I just ask you to clarify?

DR. EVANS: Yes.

DR. CARLTON: You said it -- nothing you said has anything to do with the merger so far.

DR. EVANS: Yes, it does. It does because -- so there's a transaction -- so there's two things. So, in terms of what Comcast incentives would be absent the merger, Comcast incentives with respect to OVDs now that it's crossed a zero price barrier and has the ability to ask for interconnection fees is to make sure that it is getting a price that compensates it for its losses.

Forget about all the foreclosure stuff. It's just going to want to make sure exactly what you described. It's going to want to enter into mutually advantageous contracts to split that surplus and make sure that it's doing well.

Now you get to the transaction and now it has more eyeballs than it's capable of foreclosing. I know you disagree on the bargaining theory, but the transaction effect is to expand that and to enable Comcast to get a -- to get a bigger terminating access fee. So that's one point.

The other point, just so that we don't get kind of bogged down in the theory and it's all been an interesting discussion, but **{{**

}} where I just want to make a couple of observations and -- is it okay to go into this?

DR. ROGERSON: Quickly. Okay?

DR. EVANS: So I'm going to go in -- okay, I'll into it very quickly.

DR. ROGERSON: I have no idea whether this is relevant to what we're doing now.

DR. EVANS: It is.

DR. ROGERSON: It's probably relevant to something, so -- okay.

DR. EVANS: It is absolutely, positively relevant.

DR. ROGERSON: Okay.

DR. EVANS: So, **{{**

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Those are the most significant threats that the business feels that it's facing based on the impact of the organization and their vulnerability to them. So those are the biggest risks that the Company is facing.

But there's even a better point. The better point is **{{**

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formally, but they go through **{{**

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And then they recognize Dennis' point. They recognize, and a point that I think we've all agreed to, **{{**

}}. So no one has ever disagreed with that point.

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DR. ROGERSON: Okay. Let's have a quick response to that and then we're going to move on to --

DR. CARLTON: Wait, can I just say one thing?

DR. ROGERSON: Yes, please.

DR. CARLTON: The -- Bill had asked me a question at a general level to respond to these theories and I abstracted from competition because I think it makes it stark what's lacking in the foreclosure theories.

Now, what's perfectly consistent with the board deck is that there's competition for broadband. They have no -- very little market power in broadband. OVDs are going to come in and cable TV, margins are going to disappear. So there's no inconsistency necessarily with anything I've said.

I've assumed that there's market power on each, and I know Mark has a lot of his affidavit disputing that, but that's perfectly consistent with people in the company being worried about OVD if they are not a monopolist of broadband, which Mark says they're not.

So I don't think this really goes to it, but I think there's a more fundamental point that I'm going to encourage Mark to speak about, which is if you do the vertical arithmetic, I thought there were some overwhelming facts.

DR. ISRAEL: I mean, I won't take long. I know you want to go quickly. I mean, I would say that I think everyone here and everyone in the room would agree that the shift towards OVD video is the fundamental transformation of the industry and that any deck would be expected and I think all the Comcast decks see this as disruptive and the number one challenge to deal with and the number one thing to overcome.

I agree with the way Dennis said it exactly, which is I think when you think through -- one point I would make about the general far-too-theoretical for me contract discussion is this setting is different than a lot of the contract settings in that in a lot of those we don't have this ability to also price on the broadband side. I have to do it all on the -- if I wanted to not foreclose some rival on some of their business, I would have to sign some complicated contract on the input side.

All right, in this case another alternative or an additional instrument is if people switch their content more towards the broadband side, I change my broadband pricing directly to the retail customers and basically shift the revenue I was making on video to broadband because they're now watching it on broadband.

So I can handle it either through a contract with Netflix or through the retail price, and I agree the number one struggle that the company is dealing with but it's very informative about the foreclosure discussion is as it moves to broadband will we be able to capture the same value?

But the reason that that's so relevant is if the answer to that is no, that's because they don't have the -- I mean, the obvious implication is they don't have sufficient market power to price discriminate or to capture that value on the broadband side. That's something they need to figure out.

But if they lack that market power on the broadband side, they're going to lose money as a result of this transition. They're not going to be able to foreclose. If they have market power on the broadband side or at least the ability to price on the broadband side, then they're going to be able to make money on the broadband side.

I mean, the fundamental problem with the foreclosure theory that Dennis laid out is if you have the power to -- over broadband, then you're not unhappy when the content moves to the broadband side. The Company is trying to figure that out. I believe their actions are the clearest thing we have, **{{**

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As we speak, they are letting Netflix deeper into the network. They are rapidly going to a 100 megabit service for their customers, which is only valuable for video so I think they are acting as though they are supporting it and trying to profit from it on the broadband side, but of course, they're scared about how it's going to change.

The point is just if the threats are real and they can't deal with them via capturing the profit on the broadband side, they also can't foreclose.

DR. ROGERSON: Professor Schmalensee?

DR. SCHMALENSEE: Yes, this really comes to the fundamental point. In Dennis' world, they should contract. In the world we see, they view it as a threat. They do not view it as a complement.

They do -- and this goes to their incentive to slow OVD growth. They're an incumbent defending share. They describe themselves -- or Time Warner has, one of them has, and I think that's the accurate description in an industry in which technology is moving, tastes are moving, lots going on, and to say even though the **{{**

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And the other point you made, Mark, is quite -- is I think quite relevant, which is that the more success OVDs have, the easier it is -- you almost made it, but you were almost there, the easier it is to have broadband only entry. That, of course, is very nervous-making broadband overbuild.

If you don't need MVPD content because OVD has grown, OVDs have grown so, than oh my God, they're vulnerable to broadband entry in a way they weren't before, another reason to be scared to death.

So the notion that **{{**

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DR. ROGERSON: I'm glad that we've had a good exchange and I'm going to move on because there's a whole other section of stuff we want to talk about. I'm going to turn it over to David now to address a couple of new issues.

DR. CARLTON: Because in one sense you can't contract around competition coming out in broadband. That's not what I said, and that is what I'm saying was consistent with what David -- with boards, that they're worried about competition. My only point is if you forget about competition and just focus on foreclosure, the theory is very fragile.

DR. ROGERSON: I'm actually looking -- I don't know whether there's going to be more submissions made to -- I think this hadn't been fully debated in the record among the economists up until now, and I look forward to hearing more exploration of this.

DR. SCHMALENSEE: You probably will.

DR. ROGERSON: Yes. Good. Okay. David?

DR. WATERMAN: Thank you. Well, I have a few questions about current and possible future events and how they would affect, how the FCC should think about this merger.

One is do the entries of CBS, Sling, and other OTT video providers, including SpongeBob to be according to the Washington Post this morning, of linear programming without authentication indicate a vibrant OVD industry or do there appear to be any competitive obstacles involving program access or other things the development of this segment of the industry that the merger may worsen? And we'll start on this side and open up with anyone.

DR. SAPPINGTON: Okay. I'd just like to make comment along those lines is that in speaking with the DISH people about their new operation of Sling TV, they were absolutely confident that the Commission would do the right thing and block this merger and so they would not have problems with access. But I think the words that they used were something like crazy, that they would be crazy to have proceeded if they actually thought the Commission would allow the merger and they would be subject to the throttling of the combined Comcast and Time Warner.

DR. EVANS: Can I just make sort of a very short point? So, we're evaluating a merger here. We're not evaluating the closure of the OVD industry. So, when I look at this transaction, what I'm interested in is the extent to which it slows down at the margin, the growth of the OVD industry, and is that significant and so forth.

So, I guess if the transaction goes through, do I think that the OVD industry is going to shut down tomorrow? No. It's a question of what impact is the transaction going to have.

So I've never really focused on these arguments that things are going to be totally foreclosed or shut down. I think we're going to continue to see innovation and OVD industry. The question is, "Is it going to be as good as you would see without the transaction?"

I think that's ultimately what we're trying to address.

DR. WATERMAN: Response?

DR. ISRAEL: I mean, my take on the recent developments is that we see an announcement of a new OVD service nearly every day. It seems about as vibrant a developing sector of the industry as I've ever witnessed and companies are obviously reacting to figure out what it means.

I mean, the evidence on the ground is the OVD industry is going gangbusters from the content providers themselves from DISH, from Netflix, from Sony to most of them using NBC content, a variety of content.

So, I mean, I think that I agree. We're not debating about it shutting down. It seems to me extremely vibrant. I note that when FCC has -- or the Commission has sent questions to people like -- to various OVDs **{{ }}** asking if they've had any problems in terms of getting content for their OVD service. I noted their answer was they had **{{**

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So, I don't -- to me the OVD industry is growing rapidly and doing very well. I agree that the relevant question is the marginal effect of the transaction, as long as we're not debating some feud that the OVD industry will shut down but rather the marginal effect.

There I would notice that I think there's been consensus recently that the single most important thing for OVD development is faster and faster broadband speeds, and the concern as I read it among -- it seems to be that Comcast has too many high-speed customers and they've been too far out in front in terms of their share of high-speed customers.

We know they've long been ahead of Time Warner. They're pushing farther ahead of Time Warner now. This afternoon we'll talk about reasons to believe the merger -- the number one effect will be to further increase those speeds, but I take the recent debate about 25 megabits per second and about speeds to say sort of if we're on the margin about the effect of the transaction on the OVD sector, the overriding issue is whether speeds continue to advance so that the industry will continue to innovate.

And I think we'll talk more this afternoon about why the merger helps that, but we know from what's happened already that Comcast is investing way more than $1 billion a year to continue to have faster speeds than almost anyone else in the industry.

DR. WATERMAN: Okay. One more comment please.

DR. SAPPINGTON: Sure. Thank you. Just to address the issue, which I can't do fully here but we have a future debate along these lines, the idea that NBCU programming is readily available to whoever wants it, I think we'll need to discuss that issue in the future based upon DISH's experience.

Also, what we're seeing at the moment

is perhaps the strongest potential OVDs. So, DISH, for example, had experience with DISHWorld and in doing the calculations for the case studies some of the current costs of entering the industry were lower because of the DISHWorld experience.

And CBS, for example, has its own programming and so on, so we may see the most capable and the most advantaged OVDs entering now. Who knows about the future?

And just one related quick point I want to bring back to Dennis' observation, and I think he started to touch on this in the middle of his -- at the end of his discussion, which is that even if we do have perfect costless contracting and the parties view these as complementary products rather than substitutes, and my view is that they probably -- the internal documents suggest they do see them as substitutes, not complements, but taking all of the assumptions of your analysis as given, I still think we have a problem.

And that is that if you have a dominant bottleneck -- barrier between final viewers of the products and the creators of the product and that barrier can extract all the rent, we're going to reduce incentives to have innovative programming in the marketplace.

And so this is the basic issue that has long underlied the Commission's concerns about ownership in the cable industry and my understanding is that this is why -- as part of the terms of the transaction Comcast and Time Warner have -- are going to voluntarily get rid of some of their -- or transfer some of their subscribers to other companies to keep under that 30% cable ownership limit.

The basic principles here are exactly the same. If you have a huge buyer or a huge individual who can control the access to the final buyers, they'll get excessive leverage in that negotiation and thereby could inhibit innovation in the programming industry, in this case for OVDs.

So I think there is a problem even if we take as given all of the presumptions of your analysis.

DR. ROGERSON: There's actually going to be more time this afternoon to discuss that issue extensively, and so David has one other question though that we're going to try to deal with now.

DR. WATERMAN: Yes, and we'll start over here to keep the balance. Some commenters in the proceeding had suggested that a natural course of evolution for both Comcast and TWC would be to eventually develop OTT services of their own or perhaps to buy a successful OTT entrant.

This would raise a whole menu of interesting vertical issues that we can discuss if there's time, but one question, specific question, to ask now -- I mean, if this is true that they did this, then the merger of TWC and Comcast might prevent or reduce future competition between OTTs, so how would the Commission evaluate this theory of harm of the merger?

DR. CARLTON: Let me just say one thing. If in light of -- I won't repeat what I said earlier about when my theory would be applicable, that that could be a circumstance in which my theories and my concerns about foreclosure could be applicable if as a -- let's suppose they were in the business. Let's take it as a given that they're going to go into it.

If they became the dominant OVD provider outside their territory as a result of harming -- let's suppose they could blow up Netflix and Netflix was the only other competitor that they faced outside their territory, then that would satisfy the proposition that I said earlier that now by blowing up Netflix they're gaining market power, not just over the people in their own territory over whom they already had market power so you don't gain anything there, you actually lose it to people like Netflix.

But what you do with this hypothetical is you gain market power now outside your territory in OVDs -- provision of OVDs outside the merged firm’s territory because you've eliminated or harmed a competitor. So, that would satisfy the theoretical issue about foreclosure that in my mind would now raise it to at least a logical concern that an economist should pay attention to right now for reasons I said the foreclosure theories I've heard I really have -- really don't give me a lot of concern for the reasons I discussed.

So then the central issue would be the empirical relevance of this, and I'll turn it over to Mark for determining that, but my understanding is that this notion that they are going to be either an actual competitor or if they are an actual competitor one of only a very few OVDs is what you have to examine.

My understanding is that may not have a strong basis.

DR. ISRAEL: I'll just say three things quickly. One is my review of the documents indicates that naturally they've considered all options about what to do, but the idea of going over the top or being an OVD is not something that's currently considered a profitable move.

I think they've shown that with their actions and that the Comcast platform that would've been the launching point for an OVD is Streampix, which they recently have backed off to where it's only sort of an add-on to their video product and reduced what they're doing with it, not increased what they're doing with it, consistent with documents saying there's other OVDs providing that service and they don't need to provide as much with Streampix.

And third, I agree with Dennis that I think the thing we've all said about OVDs is that there are many, many, many of them out there so you could speculate a world in which Comcast and Time Warner are two more, but I think everything we've seen is they'd be two of many, which means a) the potential horizontal competition concerns are quite low, and b) it strains credulity to me to say they could sort of make their own OVD the only one outside footprint given how many there are.

I would note also on that point that I think it's quite important that the others who we think about who is launching other OVDs include firms like Google, like AT&T has said they might do it. Verizon's looking at a mobile one.

I make this point because a lot of these are very strong firms but also because those firms -- to the point that was made earlier about broadband entry, those firms are also the most likely broadband entrants, the ones who think about building more fiber or building more wireless.

So to me the notion that Comcast could harm OVDs as a way to deter broadband entry makes no sense. In fact, what they would do would be to motivate the leading other OVD providers to enter further in order to support that part of their business.

DR. CARLTON: And, of course, all this is in addition to the point that **{{**

}}. So, it would have to be, if you really want to become an OVD monopolist or have a lot of market power, you're going to have to wait a long time.

DR. ROGERSON: Okay. So one last comment to the other side of this question, and

David, do you want to?

DR. SAPPINGTON: Yes, thank you, Bill. Again, getting back to the contract issue, it's **{{**

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Also, it's not sheer speculation that these parties might well go into the OVD business. Clearly, they're well situated to do so, particularly Comcast given its access to the programming, and then there are internal documents where they say **{{**

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So the fact that we haven't seen it doesn't necessarily mean they're not seriously contemplating it.

DR. ROGERSON: Okay. Well, with that, we're going to take a -- thank you, panelists, for a great discussion, and we'll take a break and we'll see everyone back here at 1:45. Right? No, 12:30 -- yes, 1:45.

(Whereupon, the above-entitled matter

went off the record at 12:36 p.m. and resumed at 1:46 p.m.)

MR. LaFONTAINE: Great, let's get started then.

So, first, let me thank everybody for pulling yourselves away from the wonderful food options we have here in Southwest D.C. I know it must have been hard to get here on time.

So, my name is Paul LaFontaine. I'm an economist in OSP here at the FCC. I'll be leading the first part of this panel on program access and program carriage issues from this merger.

So, joining us today from the Applicant side is Greg Rosston and Michael Topper, and on the third-party side we have Gary Biglaiser, John Kwoka and William Zarakas.

So, with me from the FCC is Andrew Wise, David Waterman, and the man that needs no introduction, I'm sure, Bill Rogerson, over here.

So, just to give a quick roadmap of where we're going to go with today's topics, so everybody can, you know, have a good idea that their topic is going to be included, I guess.

So, the first is going to be vertical program access models and their inputs. The second topic will be program carriage issues, and the third will be the effects of the transaction on program prices and their consequences.

So, our time here is very limited today. So, let's just dive right into the first question, and that's going to be for Drs. Rosston and Topper.

So, you concluded that the Nash bargaining model used by the Commission does not provide a reliable benchmark to access the effects of vertical integration due to a number of simplifications that that model makes.

However, as many commenters have pointed out, nearly identical models are used in the current IO literature and they're used to model real-world complex bargaining problems.

So, while it may not capture all of these aspects of bargaining, and we don't need to cover all of them again here, my question is, do you feel that this model provides any insight into the programming negotiations and likely post-merger vertical pricing incentives, and if not, what analytical framework should we use to evaluate the transaction?

DR. ROSSTON: So, I think the bargaining framework is useful for thinking about what incentives and what -- how negotiations might proceed.

I think there are lots of simplifications and assumptions that go into the Commission's bargaining model that we pointed out in our report and are concerned about, and the fact, I think that a lot of the inputs are problematic. A lot of the inputs that are not included are problematic and the outcome was -- in terms of what happened since the Comcast-NBCU merger, contradicts the findings of the model.

So, I think that that sort of says, “hey, there's something missing in the model and we need to worry about it.”

One of the concerns that we have in this model is that it basically will predict a price increase, no matter what, if you add one additional subscriber in a different geographic area, it says there will be price increases.

So, the question in this model is, you know, well, how much should you allow a price increase to be?

But the model implicitly starts out rigged to say there will be price increases. It doesn't take into account efficiencies. It doesn't take into account countervailing things.

So, I think a bargaining model is a great idea, but it needs to be calibrated to reflect reality and to be an effective model.

You know, having a model is a great idea, but it can't be a model that just doesn't yield results that don’t work in the real world.

MR. LaFONTAINE: Response? Yes, Gary.

DR. BIGLAISER: So, I agree it's just a model but actually -- I'm not sure I agree with that its predicted power is not true, and that there haven't been price increases.

Furthermore, one of the things that is

how well you measure the inputs, which I'm sure we'll get to in a little while, are important, and that some of the things it doesn't take into account, one of the things primarily is the reputation effects that Comcast will have to negotiate tough with one party, in order to have a reputation of being a tough negotiator with other parties.

So, it's a static model and actually, it underestimates the ability or incentive set up for Comcast to bargain hard with the market participants, other MVPDs.

DR. ROSSTON: I think the reputation effect goes both ways. One of the valuable things that Comcast has is its NBCU franchise, the NBCU side of things, and a reputation effect among viewers and customers is important on that side too.

So, it -- the reputation effect doesn't just go one way in this. They could lose their brand and they lose a lot of programs and a lot of viewers, and this is sort of a thing that they view very much as a risk, if they try to put it -- push through that.

DR. BIGLAISER: Sure, but they're one large player, interacting with many small players, and you have a larger incentive to establish a reputation for down the road, when you're bargaining with other players.

So, while I'm sure they do care a lot about the NBCU brand, it's the threat of withholding it, not even actually having to have it to happen, that gives them an incentive to bargain tough.

DR. TOPPER: I think that in thinking about this bargaining model, it does require a number of assumptions. It is useful. What weight should we give to it?

We do have good real-world evidence because the program access issues that are raised in this transaction are very similar to ones that arose in the NBCU transaction, and there is really very little additional programming that's coming over from TWC.

Primarily the effect is additional subscriber systems, so there is somewhat more vertical overlap.

If you think about NBCU -- and Paul worked on this, and Bill was involved, as well.

In NBCU, if we think about the NBCU national cable networks, they were going from zero percent to 24 percent overlap with Comcast systems. This transaction is going from 22 to 29.

So, it's kind of within the framework of what happened before, and a good thing to ask is what has happened in the real world.

Since NBCU, we've got four years to look at it and what we see is, we don't see foreclosure of MVPDs or OVDs. We see a series of contract renewals with MVPDs and OVDs, and as Greg mentioned, when we look at the pricing effects, what's happened to NBCU pricing relative to other cable networks since the transaction.

We don't find an effect using the same models that got used to look for an effect in the last transaction, which is not what would have been predicted by the bargaining model.

MR. LaFONTAINE: Any response to their empirical analysis?

DR. BIGLAISER: To the empirical analysis?

MR. LaFONTAINE: Or otherwise.

DR. BIGLAISER: Well, to the empirical analysis, I have problems with some of the inputs like the control groups that they used versus their NBCU programming that the control group has much more popular programming than the NBCU programming.

Like, nine out of the top ten in the control group are higher than the second highest rated NBCU programming.

Second, one of the issues is whether the Comcast-NBCU remedies are sufficient for this merger, and we argue that the sign that there has been no arbitration between any ACA members and Comcast is a sign that they don't think it's worthwhile to go into arbitration, even if it is -- even if they have the baseball style arbitration and it's the losing party that pays, and the losing party is Comcast.

I don't know if you want to get into that now or --

MR. LaFONTAINE: Sure, you can bring it up now.

DR. BIGLAISER: Okay.

MR. LaFONTAINE: Sure.

DR. BIGLAISER: And the reason is two-fold actually threefold.

Comcast has very large scale, relative to ACA members. So, putting down $1 million to start an arbitration process is a big hurdle for an ACA member.

Furthermore, even if Comcast has to pay if they lose, Comcast has a huge informational advantage versus the ACA members, in terms of what is fair market value.

They negotiate with various other MVPDs. They know what the prices that they charge these other MVPDs. One of our members is in isolation, relative to Comcast.

So, they don't have access to the programming agreements that Comcast has, and this ability to do the baseball style arbitration means that Comcast has a much better idea to be closer to what the arbitrator thinks is fair-market value, relative to an ACA member, in order to win the arbitration.

Finally, it also has the reputation effect, that if it goes to arbitration any time, other ACA members are afraid that well, we don't agree with Comcast, we have to go to arbitration, and that's really costly, and they're going to be tough. They're going to hire very expensive, fancy lawyers and economists.

DR. ROSSTON: So, I'll talk about --

MR. LaFONTAINE: That's the economist.

DR. ROSSTON: -- the control group.

MR. LaFONTAINE: That's correct.

DR. ROSSTON: And I’d like to talk about the remedies.

On the control -- the control group issue that Gary brought up, he basically said that we shouldn't have included ESPN, ESPN2 and NFL networks in the control group.

There is no theoretical reason to sort of say, well, you should exclude these guys. It's sort of like if you exclude all the top guys, the average is going to go down and other things. It's just that there is no theoretical reason to do it.

That said, we did it, and it didn't change the results at all.

So, Gary, there is no evidence that prices have gone up. Still, even making the corrections that Gary suggested, it still holds.

So, these are bigger ones, but it doesn't mean the growth is faster. So, there is still no evidence, even taking that into account.

MR. LaFONTAINE: Thank you.

DR. ROSSTON: I think Mike was going to talk about the --

DR. TOPPER: Yes, in terms of the remedies and the arbitration, you know, an alternative view is that the combination of market forces and the regulatory regime has led them to reach agreement, and we observe agreements between NBC and all kinds of MVPDs. That's been the experience since the transaction.

If you think about what do parties bring to an arbitration, in terms of information, an MVPD is negotiating with lots and lots of programmers, to put its programming package together. A programmer is negotiating with various MVPDs, to try to sell its programming.

So, they both bring information to the table that they can use in the transaction, and the NCTC is able to negotiate on behalf of many of these smaller cable companies.

DR. BIGLAISER: So, regarding first, the NCTC only negotiates for NBCU programming, not RSN's programming or NBC O&O's programming.

Second, the information that Comcast has is both a buyer and seller programming. Our members are just buyers of programs, and they don't have the wealth of information that Comcast has.

Furthermore, we talked to some ACA members. Some of them have gone through arbitration, not with Comcast, but with other programmers, and they said even though they won, they may not do it again, given how costly it was and how tough in the future, the programmer became, in bargaining future agreements.

So, you know, the arbitration process can take years, and the contracts expire after a few years and then they have to re-negotiate with these guys, and it's -- they said that they're really tough, and our members don't have anywhere to go.

MR. LaFONTAINE: Okay, I think we're going to move onto the next question, unless there is anything else.

Okay, so, Drs. Rosston and Topper, during the NBCU proceeding, opposing economists used publicly available data to estimate Comcast profit margin on new video subs. So, here, we're going to go into the inputs of the model a little bit.

One such estimate from Craig Moffett at the time was 42.98 that was publicly in the record, and Comcast economists also publicly noted in the record that this estimate was too low, compared to the correct estimates they calculated from company data, that incorporated the fact that some video subs subscribe to broadband and phone service, as well.

You have now estimated that Comcast profit margin for new video connect is **{{ }}**, which is much lower, and did not include the broadband and phone services into this calculation.

Why did you choose to do the calculation differently than the approach used by Comcast and the Commission during the NBC proceedings?

DR. ROSSTON: So, what we did was, we looked at the variable cost. We went and did it ourselves, and used the approach of looking at what are the variable costs from what Comcast used internally for its customer lifetime value, and we were able to come up with the way -- the categories of spending that Comcast considers either what they call variable or step variable, what I would call incremental, certain things like customer service costs and other things that you -- if you're going to engage in a foreclosure, you're going to get a bunch of customers, and so, you're going to need to up your customer service, your truck rolls, and others things like that.

So, those things are sort of -- they are incremental costs and they do vary with the number of subscribers.

So, we put those things in. Programming is obviously a marginal cost, and we came up with what the marginal cost would be for a new video subscriber. So, that was -- we kind of built it up ourselves, from the ground up.

We did not include the data subscribers or telephone subscribers. One issue is that in the past, the way it was done, we were under the impression, because it was redacted, that the FCC had done only the video subscribers, but we could be wrong on that. It could be that you -- that the FCC did include the others.

One question and issue with including data and telephone subscribers is trying to figure out if you engage in a foreclosure strategy, how many of the subscribers who have come over would take a data service?

I think it would be not a great idea to look at the current mix of double and triple-play subscribers, because these are people who have actively chosen to stay with Comcast, versus the switchers who have said, we're not going to be with Comcast for video. We're switching on the basis of a foreclosure episode.

Some of those customers who were say, taking DISH, already have Comcast data. So, there would be no incremental profit from those guys. You look like you're ready to stop me.

MR. LaFONTAINE: Well, would you say the weight should be greater than zero, at least?

DR. ROSSTON: I mean, there is an issue of what the weight should be. I agree.

So, we need to know what the weight should be --

MR. LaFONTAINE: Yes.

DR. ROSSTON: -- in order to do that, and if they have it -- yes, we would try and recalculate that and think about that issue, but we'd like to think about what reasonable weights would be.

DR. BIGLAISER: So, the question that I had with the data it was very hard to figure out how it worked and I appreciate how hard Greg and Mike must have worked to get the profit data, the calculation.

But when I was looking at it, the variation across regions for video profit was **{{**

}}. I'm not sure, I don't know exactly, and it's hard to know why since the programming is very similar.

There is difference in sports networks, but the programming is very similar. Why are the profits so much higher in one region than another? So, that was --

DR. ROSSTON: So, there are two reasons: revenues and costs.

DR. BIGLAISER: Okay.

DR. ROSSTON: That people buy very different packages in different areas. Pricing is different.

DR. BIGLAISER: Right, but the packages --

DR. ROSSTON: For different video

services.

DR. BIGLAISER: Yes, yes, yes.

DR. ROSSTON: They buy HBO in some areas. They buy premium sports in some areas. They buy very different packages, just on the video side.

So, the revenues are quite different. Also, you mentioned RSNs, but there is also re-transmission consent. The number of stations that you pay retrans fees for varies.

So, both of those vary a lot and that explains -- we went back city-by-city and looked and it explains the difference in profits across cities.

DR. BIGLAISER: So, have you -- I mean, you only have one NBC O&O, and the other three networks Comcast is buying, whether it's in Philadelphia or in Houston.

DR. ROSSTON: But they charge different prices. Different local stations charge different retrans fees, whether they're --

DR. BIGLAISER: That much different?

DR. ROSSTON: -- by home or by groups.

DR. BIGLAISER: I mean, they're two major metropolitan areas. I just --

MR. LaFONTAINE: I think we've gotten into a data issue, and we can look at their backup and confirm what those costs are, and the revenues.

DR. ZARAKAS: Can I comment?

MR. LaFONTAINE: Sure, yes.

DR. ZARAKAS: So, I have less of a concern necessarily with the average, but I do have a concern with what I'm going to call a **{{**

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So, if you think -- from what I've been able to gather, if you go back to the NBCU case, originally, Comcast put forward in their vertical integration -- their vertical foreclosure model, this **{{** **}}**.

So, they have a profit number for the **{{**

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From what I can tell, in the Commission's order in -- the Commission's order, the Commission said we're going to use an average profit number, and you referred to some of those average profit numbers that have been kicked around.

So, what Dr. Rosston and Dr. Topper did is, they went back to, I think, something similar to what Comcast originally proposed in the NBCU case, and so, the average number we're talking about is – **{{**

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But they break it down into **{{**

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So, let me just spend just a quick minute on how the profit is calculated in general.

So, Comcast has regional **{{**

}}, and it has -- it has its recurring expenses, and those recurring expenses, there is an allocation, so we can get it to the residential sector.

So, we can come up with an average number for each region, and a region is associated with a DMA. I'm sorry, a region can be -- a DMA can be assigned to a region.

So, we can come up with average profit, just by taking those recurring revenues, the -- and pay-per-view and even installation, and we could subtract out the variable expenses.

That gives us a nice solid average profit for the average subscriber, and from what I understand in the NBCU case, that's what the Commission looked at.

So, what was done in the model as proposed is -- started the same way. **{{**

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So, in other words, {{

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MR. LaFONTAINE: So, a response from Greg or Michael?

DR. ROSSTON: So, this is the way things work in the business, is that you have big upfront costs to get a customer, and the revenues come from getting a customer and having it stay with you for a while, and so, this is not an unreasonable way to think about how you model the business.

It may not have been what the FCC did in its final order on this, but I think it's what was submitted and how the model should work, is by looking at what the business works and how the cash flows in an actual business.

DR. ZARAKAS: And I don't disagree that that is a cost that goes into the business, but in modeling that I've looked at, as well as in the FCC's decision in the News Corp. case, they said we follow the standard method used by both the applicants, this is News Corp., not Comcast, and comments have -- amortizing these costs over the length of time that this subscriber is expected to stay, in this case with DirecTV.

So, as opposed to taking all those costs {{

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The way it was done in prior models that the FCC used is those costs, those subscriber acquisition costs were amortized.

So, the impact of amortization is {{

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MR. LaFONTAINE: Okay, we'll look into that, and we're going to move onto the next.

So, now, I would like to systematically work through the evidence, the empirical evidence that's been submitted into the record on departure rates, and so, we'll start with the media general dispute.

So, Drs. Rosston and Topper, how would you respond to Professor Biglaiser's criticism that there are significant problems with the SNL Kagan data, the MVPD subscriber data, to estimate departure rates for this foreclosure episode?

DR. ROSSTON: So, I think two things. One is we know there are issues with the SNL Kagan data, but it was the data that we had available to us to use.

Second is that when we use it, we not only looked at the time right around the event, but we also looked at the end of the first half and the end of the first -- end of the year -- sorry, end of the first half of the year and the end of the year, when they make the semi-annual filings.

So, we looked at that as a way of looking at things. What that does is, that doesn't necessarily, sort of bracket the event precisely, but what it does, it gives you an idea of the total effect because one of the key inputs into these models is how fast do people churn back.

So, it's sort of the net effect after -- a month or two after this event.

So, it's problematic because they don't have the precise data from DISH, as to what happened, but the SNL Kagan data is there and we didn't rely on it. We actually -- it came out as a lower event, lower number and we didn't end up using it.

But we do think that it would provide some information. If there were better data, we'd use it, and I think that sort of just criticizing the data and not coming up with an alternative is easy.

MR. LaFONTAINE: Okay, I'll let Gary go first and then Bill.

DR. BIGLAISER: So, you know, the event happened in between the June 30th and January 1st, and so, the tick up, it was already like 45 days to recover. So, we couldn't tell.

So, I appreciate, you know, if this is the data you have, there's not much you can do with it, but what we are arguing is that using the same data that they use for NBCU Comcast, the Fisher-DISH data, is the more appropriate set of data, and I think Bill actually knows a lot more about that than I do.

MR. LaFONTAINE: Bill, you want to add to that?

DR. ZARAKAS: Thank you. Yes, my concern is not necessarily the results of the -- of a black-out period of a month or so, and finding out what the actual departure rate there is.

I don't think it's appropriate to think that that is what a foreclosing entity would do, that they would -- they would foreclose for a month and then stop.

So, it provides some evidence as to how many customers you might lose, if you were out of service for a month, or you didn't receive those programs that you liked for a month. Fisher-DISH does the same thing for six months, and the numbers are quite different.

So, my biggest concern is that we're saying here is a one -- here is one observation that we have. It's one month and therefore, that's the way a foreclosing entity would act. I don't that that's accurate at all.

MR. LaFONTAINE: Greg or Michael?

DR. ROSSTON: So, I think that what we did was we looked for events, recent events.

The idea that you look for an event, that is not how an MVPD who is trying to foreclose would act. Then it's sort of hard to argue that Fisher was a vertically integrated monopolist trying to foreclose either.

So, you're kind of making up what the right length of time should be, by using something you have. That's the data we have, and I think that's okay.

You know, the idea was that there was an argument that Comcast, when it became an owner of NBC, would have a lot of incentive to foreclose. There have been no events of any substantial length, where NBC has been foreclosing or even withholding or being in disagreement with people.

So, that's hard to sort of argue about that piece. Are we going to talk more about the Fisher data?

MR. LaFONTAINE: Yes, we will.

DR. ROSSTON: Or should I just go on?

MR. LaFONTAINE: Sure, it's coming up soon. It's going to --

DR. BIGLAISER: Can I go to Greg's point right there?

MR. LaFONTAINE: Sure.

DR. BIGLAISER: So, just because they agreed to a contract with Comcast, and didn't go to arbitration or just drop the program is that they had basically no choice, because the arbitration process is so onerous for firms.

So, to say that, well, we didn't see any problems doesn't mean that it worked well, the bargaining advantage was so high for Comcast that the members didn't have much choice.

DR. TOPPER: So, I think we're talking about looking for some evidence of departure here.

DR. BIGLAISER: Right.

DR. TOPPER: And I think we would all agree that if we saw post-NBCU Comcast withholding programming, we could look at the departure. We might learn something from that.

What we did was, it wasn't just looking at one event. We looked at all the events that we could find, and we actually picked two events that were the longest, that involved a substantial amount of programming, not in tiny little DMAs.

So, that was Media General-DISH and then the CBS dispute with Time Warner Cable, recognizing that neither of those is a perfect match for the questions that we have.

We were quite concerned about going back further in time, because if you do go back to Fisher-DISH, you're talking about an event that happened in 2008/2009, that we're trying to use to forecast what might happen when contacts expire after this transaction in late 2015, late 2016 and later, at a time when there's been considerable change in the industry, as we heard about all morning.

There is a lot of change in the industry that suggests that the kind of departures that you might see back in -- at the time of the Fisher-DISH dispute are out of date.

MR. LaFONTAINE: So, let me -- okay, go ahead.

DR. ZARAKAS: If you --

MR. LaFONTAINE: No, go ahead.

DR. ZARAKAS: Can I? So, I don't disagree with the way that there were few observations to look at recently. You had to make sure that there were -- there was a control group and there were enough DMAs.

But what that evidence shows us, by looking at a one month or so, 30 days or 40 days foreclosure, it just tells us that if consumers react, subscribers react a certain way when there is -- when they're blacked out of programming.

It doesn't -- I think we're mixing motivation to foreclose with what happens after foreclosure.

So, I think we know that a one month taking of the results that Greg and Michael presented, a one month foreclosure based on that evidence gives us -- **{{**

}}, and I'm rounding up, of subscribers. Six months gives us **{{** **}}**.

So, I don't think that either say that's exactly what's going to happen after this merger. It's just showing what's going to happen if subscribers lose that programming.

DR. BIGLAISER: Regarding the Time Warner, and CBS event, that happened in August, when basically there was reruns, and not any new programming. That's when the NFL hasn't started. In fact, it's not coincidental that they settled the dispute two days before the NFL season.

So, there wasn't much leaving of Time Warner before that. Well, there wasn't much going -- people are gone. They're on vacation. There is not much new programming. There is not that big of demand that, oh, we're missing out on some rerun program. It's not there.

When the new series -- fall season starts, when football starts, then you could imagine a big change in behavior of consumers.

So, it's kind of like the dull period of August, where there is not much action.

DR. ROSSTON: I think there's a big difference between 2008 and now. You're trading off something that happened, you know, no one in this room was watching Amazon streaming. No one in this room -- or hardly anybody was watching Netflix streaming. DBS had much lower share. Cable had a higher share in 2008/2009. These things have changed.

The world has changed a lot and it's going to change more by the time we get to this. So, we have to make a trade-off, and I think that worrying about something that was that long ago is problematic for trying to predict what's going to happen in the future.

MR. LaFONTAINE: So, on that point, do you think -- I mean, you said in a number of contexts, that the video market is more competitive today.

Do you think that would lead us to conclude the departure rates might be higher today than they were in 2009, when the Fisher-DISH dispute was?

DR. ROSSTON: Well, I think there is probably more departure, but not necessarily because you are foreclosed because of an event like this.

There is more churn, more trading off. People moving around more, because there are more options.

There is more programming available and you can watch lots and lots of stuff on Netflix. You couldn't do that before. You would watch original programming in other places, so that an alternative -- churn might be higher, but departure rate might be substantially lower, because you have access to the programming in other ways, to programming in other ways, and the necessity of getting NBC programming might be less for a provider.

DISH has shown that it's willing and it thinks it's okay to give up on certain programming and it states that it's not hurting its subscriber numbers. That's probably different than it was in 2008/2009.

So, I think that's a big difference, that you need to think about, in terms of what would a departure rate be?

The other key, at some point, and I don't know when to discuss -- is the diversion rate -- right? So, we have both departure and diversion, and I think that the departure rate, even if you think the departure rate might increase, the diversion rate might not. You need to put all these other things in the denominator, so the diversion rate is going to probably be substantially affected by this, as well.

There was evidence in the previous transaction that Comcast **{{** **}}**, even though the departure rate was

{{ }}.

So, we need to think about what does Comcast gain from this, and I think the diversion rate is right now, in these models, is ad hoc and not really done in a way that reflects reality.

DR. BIGLAISER: I agree with Greg, that things have changed, but one thing that hasn't changed is sports.

You know, if you have an RSN, that's where you have to get that programming from, and there are lots of alternatives to many programs, I agree completely. You know, Netflix, Amazon.

But sports is something that's different, and there is only usually one source for the sports programming.

DR. TOPPER: And it may be useful, if we're going to talk about RSN's, just to bound the problem, because if you look at where subscribers are coming from, from the TWC transaction and the Charter divestiture transactions, for the most part, for most of the Comcast RSN's, there is very little change in the footprint, so that going from

RSN to RSN, there is really no -- there's no transaction-specific effect.

Where TWC has RSN's, again, there is limited effect. It's just a couple of RSN's. So, it's a narrow issue. It's not a large issue.

MR. LaFONTAINE: I'm going to Bill here. He had -- you had something to say on the position.

DR. ZARAKAS: I was -- I guess the question to Greg was, there is a lot of changing in what we've -- what the FCC has done and what these models do, for the most part, is they use as much historical data as we can, as much recent historical data.

I guess, Greg, you're suggesting that we don't use historic data for the diversion rate?

DR. ROSSTON: That we -- no, we actually use data for the diversion rate. We don't do that right now. The way the diversion rate is done is basically by assumption.

DR. ZARAKAS: I'm sorry, the diversion rate is based on the relative market shares of the players.

DR. ROSSTON: But that's based on assumption. That's the way people are going to go. It doesn't turn out --

DR. ZARAKAS: Well, it's --

DR. ROSSTON: -- that it's based on actual data of people moving. It's based on assumption that people will go according to the market shares.

DR. ZARAKAS: And as such, I guess what I'm saying is, does such data exist that we know --

DR. ROSSTON: In the previous transaction, Comcast put in data by Israel and Katz, that showed that in the Fisher-DISH dispute, they {{ }} in those DMAs.

DR. ZARAKAS: Well, but we don't know --

DR. ROSSTON: So, there is data.

DR. ZARAKAS: -- where they went, right? So, I mean --

DR. ROSSTON: But that -- but that doesn't matter where they went. If they didn't go to Comcast, Comcast doesn't benefit from this.

They could have gone to DirecTV or they could have given up.

DR. ZARAKAS: All right, well, subject to --

MR. LaFONTAINE: Okay, let's move forward then, and we take your point on --

DR. ROGERSON: Would you mind if I asked just one --

MR. LaFONTAINE: Sure.

DR. ROGERSON: -- little follow up question? I was -- I wasn't sure I got closure on one issue.

Apparently, there is a one month episode where about **{{ }}** left, and then there is a somewhat older six month episode, where about **{{ }}** left.

I think I heard Professor Zarakas say --

DR. ZARAKAS: It's not Professor, but I'll take it today.

DR. ROGERSON: Doctor, okay, just say that he views those as both very consistent, that he thinks that he's looking at -- he says that those just support each other, and it's suggesting to him that had there been a six month foreclosure with the CBS Time Warner incident, probably there would have been a six month too.

Is that -- now, you didn't directly respond to him saying that. I'm just curious what -- how you feel about -- if I'm interpreting what you said correctly.

DR. ZARAKAS: That's generally correct. I don't -- you know, I don't -- I'm hesitant to draw a line between the two and say, so three months falls here, but I do think that --

DR. ROGERSON: But you viewed them as not inconsistent --

DR. ZARAKAS: I don't --

DR. ROGERSON: -- and then the question is, do you want to use the six month rate or a one month rate?

DR. ZARAKAS: That's right.

DR. ROGERSON: Right, and --

DR. ROSSTON: So, I think, you know,

what we did when we -- when Professor -- Doctor Zarakas --

DR. ZARAKAS: No, it's just Bill. That's okay.

DR. ROSSTON: -- putting in his statement, he said, you know, "look, you guys really messed up because you used a one month rate and you should have used a six month rate," and he shows in his report, that if you start at the one month rate, he has a critical departure rate equal to ours, and his goes down.

Well, and he says, "boy, look at this. You got a critical departure rate that's going down. You've got actual departure rate that's going up. They cherry-pick this and this is a problem."

DR. ROGERSON: This is not what I'm talking about. I'm not talking about the temporary foreclosure calculations. I'm talking about just the question -- the data question at the moment.

He says getting **{{** **}}**. So, that's the first issue.

Then I am going to ask you, in the bargaining model, which contemplates a permanent foreclosure, do you think a one month or six month is more appropriate, but I'm not there yet. I just want to first find out.

Okay, I want to first find out if you agree that it see -- that on this one month versus six month issue, that he thinks probably your new data is just consistent with his old data.

DR. TOPPER: I'm not sure what to say about consistency, and where the number goes.

I think we would say that if there was a longer black-out, that additional costs get imposed on the MVPD, more subscribers would leave. How many more? Not sure, in the current environment.

But it's also true that additional costs get imposed on the programmer, in this case NBCU.

DR. ROGERSON: And in the bargaining model, which contemplates permanent foreclosure, what is -- what would be, if we had perfect data for a six month foreclosure and perfect data for a one month foreclosure, which would be more appropriate to use?

DR. ROSSTON: I think you need to have data, not just on the six month departure rate, but also on alpha. You need to know the diversion rates, and you need to know --

DR. ROGERSON: Oh no, absolutely.

DR. ROSSTON: -- and --

DR. ROGERSON: There is a number of issues -- I'm only asking about one parameter in a -- you know, we're multiplying six of them together.

DR. ROSSTON: My thought is --

DR. ROGERSON: I'm only asking about the one.

DR. ROSSTON: My guess is -- my guess -- I didn’t think about it, but my guess is that the point you're trying to make is that six months would be better, but it depends on whether you have -- if your assumption was that it was perfectly measured and --

DR. ROGERSON: Right.

DR. ROSSTON: -- up to date and that sort of stuff.

DR. ROGERSON: Right, and so --

DR. ROSSTON: I want to make sure there is that caveat.

DR. ROGERSON: So, you've got to -- right, so, there is that issue.

DR. ROSSTON: Yes.

DR. ROGERSON: Maybe it's not perfectly measured --

DR. ROSSTON: Yes.

DR. ROGERSON: -- and probably we'd all rather have a six month --

DR. ROSSTON: Probably I think we --

DR. TOPPER: And for the purpose of science, I'd rather see, you know, that foreclosure having been done by NBCU.

DR. ROGERSON: Yes.

DR. TOPPER: I mean, we don't have the data that we'd like, to get --

DR. ROGERSON: Right.

DR. TOPPER: -- real precise about this.

DR. ROSSTON: Let me be clear, he doesn't think that he'd like to see NBC-foreclosing!

(Laughter)

DR. ROGERSON: And the FCC isn't asking for it --

MR. LaFONTAINE: Let's move forward to the next question, which is for Drs. Rosston and Topper.

You suggest there is no transaction specific foreclosure effect on the Time Warner Cable sports-net L.A. RSN, since that is not currently distributed by any MVPD's.

However, given the increased cable clustering in the L.A. market and the logic of the vertical models, wouldn't that suggest that the price demanded might be higher in the future and the probability that it will be carried by another MVPD would be lower, so we should analyze that event? Or that possibility?

DR. ROSSTON: I mean, I think

theoretically, it's a possibility, but there are two countervailing facts.

One is that they've already -- in Los Angeles, Time Warner separately has agreed to set -- has offered to go to binding arbitration, and the other parties aren't taking them up on it.

So, presumably, they're willing to say, we're willing to do this at a market price.

The other is that if you look at Chicago, where the situation is similar, the prices aren't higher.

So, you'd want to look at markets where they already have the same -- or similar concentration in fact, an RSN with one more team. So, that would be how I'd look to see, what do you think the effects would be, and you don't see any effect there. So, that's how I'd respond to that.

DR. TOPPER: And I think a third point on it is, what if a party said they've said they've done just fine in this situation without the programming, where TWC really wants to distribute this program, and they paid a lot for the Dodgers.

This is turning out to be a bad business decision for them.

Other MVPDs have not taken it up, and if you look at the statements that those other MVPDs have made, they've said, we're doing fine in our MVPD business.

MR. LaFONTAINE: I'm going to -- we're going to go into our program carriage now.

DR. TOPPER: I feel like we need to --

MR. LaFONTAINE: Yes.

DR. ROSSTON: Can I just make one point?

MR. LaFONTAINE: Yes.

DR. ROSSTON: You kind of cut me off as I was making this, because I think it's pretty important, is that -- what I was in the middle of just showing was, Dr. Zarakas shows the critical departure rate declining, and the actual departure rate increased, you know, it was higher.

It turns out it was a mathematical error. He just implemented the math wrong. He calculated the critical departure rates incorrectly. The way it works is, you have, as Mike was saying, you have benefits and costs from foreclosure.

In month one, you have benefits and costs. If you have a one month departure rate, you have benefits and costs in month one, and then you have a stream of benefits that continues on.

Professor -- Dr. Zarakas and I -- we came to the exact same number for one month, and then you can get a two, three, four month rate. For a six month rate, he counted six months of benefits from foreclosure, plus this stream and one month of cost.

So, his number goes down, which is counter-intuitive. It turns out, when you correct for his simple error, these numbers go up and there is no foreclosure issue for DISH at all. Just correcting this simple math error.

This is not an opinion. This is math. It's just, he didn't count the number of benefits and costs right.

DR. ZARAKAS: Okay, I'm going to have to go back and check that. I can't --

MR. LaFONTAINE: Yes, we'll look at the

back up for that.

So, let's go into program carriage, then. So, I want to turn it over to Andy Wise.

DR. WISE: Thank you. Professor Kwoka, we've been quiet, you and I so far. So, let's get our chance here.

In your filing, you have claimed that the transaction's effect on Comcast's ability to damage rival Hispanic programming will be greater than its ability to damage other types of rival programmers. Can you explain why this is?

DR. KWOKA: We have looked at the DMA's that are heavily Hispanic, and in the filing, we've listed out from Nielsen, the 20 largest Hispanic viewing audience DMA's.

In those areas, Comcast plus Time Warner Cable represent a significantly higher fraction of the total market than they do overall.

They represent more like 40 percent total in market share in those heavily Hispanic DMA's, and represent, as they said, a much lower fraction, 29 or 30 percent after the divestitures nationwide.

So, the concern that the Hispanic programming sector has is that the -- in those DMA's that are heavily concentrated with Hispanic viewers, that there is substantially more buyer power as a result of the merger.

DR. WISE: And can you justify or discuss at least, a minimum threshold for harm, in terms of Hispanic penetration in major DMA's?

DR. KWOKA: Well, there is no bright line standard answer to that question, any more than there is to all of the other questions that we wish we had better information and better empirical evidence on.

What we've argued however, what I've argued is the following, that the Commission, for a long time, has used 30 percent as a default standard. It's taken a couple of swings and made some hits and some misses, as to trying to justify that, but that's a standard that has been a default standard for a long period of time, and seems to have allowed most of these markets to work, to the satisfaction of many, if not all parties.

What the merger will end up doing is to substantially pierce that ceiling in the heavily Hispanic areas.

But again, whether 40 percent or 30 percent or some other point represents the critical value is an exercise that, you know, kind of defies easy answers, any more than on the seller concentration side, where we have thresholds, but they represent guidance, not obviously, critical break points.

DR. WISE: Would you like to respond?

DR. TOPPER: Yes, I can start and then maybe Greg can jump in.

We're talking about Hispanic programming, but I think the -- and we can talk about that, but I think the issues are similar for other types of program carriage issues, not just Hispanics, so, I'll kind of cover both of those.

I think that, you know, a first point is that Comcast NBCU faces strong upstream and downstream competition. That's not going to change, because of the transaction, and it's a very different environment from the rules that were trying to be set with, the horizontal ownership cap, which were in a time when there was much less MVPD competition and I'm not sure about the hits. There were certainly misses by the FCC, in being successful with that standard.

But if you think about the situation of program carriage, of Comcast wanting to help its own Hispanic cable networks, so, we'll take Mun2 as the example. That's something that Professor Kwoka raises in his reply report, by entering into anti-competitive carriage against LATV.

First, you have to ask, what is the benefit of doing that for Mun2, given the significant upstream competition that Mun2 faces from lots and lots of programming, cable networks, over-the-air networks, both Hispanic and otherwise.

There is very little incremental benefit of reducing competition from LATV, which is a small player, and for LATV or any other network, there is a large open field, larger than at the time that the horizontal ownership cap was being debated of MVPD's, of going over the air, of increasingly OVD's, and at the same time, for Comcast, if it's attractive programming that it's not carrying, there is a cost and risk associated with not carrying it, in its ability to compete in the MVPD marketplace.

So, those are sort of some conceptual issues, and Greg and I took a look at this empirically in our September report.

So, let me just mention a little bit of that empirical analysis.

First, if I look at Comcast and its carriage of unaffiliated programming networks, it carries more unaffiliated programming networks than TWC and all of the other cable MVPDs.

That's true if I focus on so-called independent programming networks that are not part of the big -- of the top 15 groups. It's true for all unaffiliated with Comcast programming networks.

So, that's a first piece of empirical analysis, about what's going on here.

The second one is, in the last transaction, one of the things that was used to suggest that there was a program carriage concern was the so-called Goolsbee analysis, which looked at Comcast carriage of legacy Comcast cable networks, this is before NBCU, and whether they were carried more frequently when Comcast faced more competition from DBS and telco, and in that transaction, at that time with these Comcast legacy networks, the FCC found that the Goolsbee analysis was suggestive that there was a program carriage concern, and then inferred from that that there could be a concern about the newly acquired NBCU cable networks that were coming in in that transaction.

So, I think that's an interesting analysis. There are some problems with interpreting Goolsbee, but we went ahead, and this is all in our September report, and we applied the very same Goolsbee analysis now, to the set of networks of the larger NBCUniversal, the combination of the Comcast legacy and the new NBCU networks.

We looked at current, as of 2014, carriage data, same data source, and we run the same specification, and there is no evidence of Comcast carrying its own affiliated networks more when it faces more competition from DBS and telco, as measured by the DMA share of DBS and telco.

So, two strong pieces of empirical evidence of what's actually happening in the market, that cut against program carriage concerns.

DR. ROSSTON: So, just -- can I just add one more point, which is the unaffiliated carriage of Hispanic networks by Comcast is also higher.

So, just in relation to this specific thing, we did the same exact channel count with Rovi data and everything else, and the Hispanic carriage by Comcast, average number per headend and overall, is higher, in fact. They carry almost all the Kagan-identified Hispanic networks.

So, if they're going to foreclose,

they're not doing a very good job of it.

DR. KWOKA: Let me offer some additional facts, and then I'll try to respond more directly there.

LATV, of course, is one of Entravision's channels that they have been actively trying to gain carriage for, and it's really had three different historical experiences.

Prior to the acquisition of NBCU by Comcast, there was a document in the record where {{

}}.

Subsequent to the acquisition of NBCU, where Telemundo and Mun2 become part of the portfolio obviously, and raise the issue of altered incentives to carry unaffiliated programs, the experience at LATV has been quite different.

The only places it's gained carriage are places where its contractual -- where the arranged contractual arrangement between Univision and NBCU have allowed for carriage of LATV.

Efforts to gain carriage for LATV in other markets, including Atlanta and Sacramento, have produced secondary de-tiering of its carriage, or simply the absence of carriage all together.

So, you know, the experience of LATV is quite different, subsequent to the NBC acquisition by Comcast, and in the -- kind of third episode, the third more recent episode, is that a -- there is documents in the record to show that Comcast is {{

}}.

So, it had interest in LATV. Then the experience was that it acquired its own in-house Telemundo channel and Mun2. It became less interested, and it remains uninterested to the point that as developing additional program alternatives, rather than turning to LATV, which is seeking carriage.

So, the second -- that's an anecdote, but an important one that illustrates the plight of the Spanish language programming industry in gaining carriage with Comcast.

Comcast is a single purchaser of programming. Programming buyers are not all identical. This is not a theoretical model. Programming that's acquired by Comcast tends to be acquired by other -- by other cable and MVPDs.

So, there is an intense interest in gaining carriage with Comcast.

So, we've also introduced into the record in the reply round, the following fact, and that is that we have, in some ways, a natural, almost experiment, because there is Comcast with NBCU and there is Time Warner Cable, without the comparable Spanish language programming internally generated.

What we've shown is that in -- as between the two alternative distributors, that the -- and again, in the top 20 heavily Hispanic DMA's, that

Time Warner Cable has allowed carriage, that gives viewership to almost twice as many, twice as high a percentage, to be clear, twice as high a percentage, in those heavily Hispanic DMA's as LATV has under Comcast. Let me restate that, just to be clear.

The percent of viewers in the top 20 heavily Hispanic DMA's, LATV has approximately 70 percent exposure by a population, in Time Warner Cable operations, and about slightly over 40 percent in Comcast cable systems.

So, LATV to repeat, is having great difficulty from the perspective of having to compete with an in-house Spanish language channel, it seems that the incentives are working very much as economics would and business incentives would suggest.

DR. TOPPER: So, can I respond to that?

DR. WISE: Quickly, please.

DR. TOPPER: Yes. So, a couple things, and I might not get to them all.

But there is more to the LATV story, and in large part, LATV has followed a strategy where they've gained carriage by being a multi-cast of a broadcaster, and they entered into deals with Entravision to be a multi-cast of Entravision when they got -- when they were Univision affiliate, and in some of the cities that John mentioned, they've entered into agreements to be the multi-cast stream for third-party broadcasters, and in particular, they had a deal with Post-Newsweek.

They were the multi-cast stream for Post-Newsweek, who then, after having them for a while, made a business decision not to carry them anymore.

That was a decision -- that was an agreement between Post-Newsweek and LATV. Comcast had nothing to do with that, and there are -- this is a deeply factual issue. We can get more, kind of facts on the record, but Comcast actually made efforts to find carriage in certain DMA's, when the multi-cast partner of LATV dropped them as the multi-cast and took on some other programming. That's the one thing.

Another is, I think we have to be careful about focusing on an anecdotal network. What's really important is that programming is flowing from programmers to consumers, and again, the data that Greg and I referenced, Comcast is carrying more unaffiliated Spanish language networks than any other cable MVPD.

Looking at the Rovi data from 2014, they are carrying 30 different unaffiliated Hispanic language networks, and since the time that we did that data pull, in the fall they entered into an agreement with Univision to carry four more.

So, they're carrying a lot of Hispanic language programming.

DR. ROSSTON: They're unaffiliated, and that's the key.

MR. LaFONTAINE: We're going to have to cut this off, I think, I think here.

DR. KWOKA: We'll submit some additional material, if that's agreeable to you, to flesh this out.

MR. LaFONTAINE: That would be great.

Yes, that would be great. No, that would be great.

Yes, one last final very quick question, for you -- well, for me, and then I'm going to turn it over to David, for the last question here.

You mentioned a number of problems with the Goolsbee test, four -- at least four issues that you mentioned. They seem to me, to be mostly data and model specification issues.

If those were corrected, do you think that the underlying logic of the Goolsbee test is valid and could be used to evaluate the transaction, and if not, what would you propose to use instead?

DR. ROSSTON: I mean, I think the biggest one is correlation versus causation, that we talk about quite a bit in our report, that you would have to figure out how to get around that and that's a big thing, but there also are all the data issues that we discuss in our report.

We think --

MR. LaFONTAINE: But yes --

DR. ROSSTON: But we don't think -- but we think the evidence --

DR. LaFONTAINE: But that's true of any -- of any model, right?

DR. ROSSTON: Right, so, we think that -- we think you need the right data and you actually need a model that has a theory that makes sense.

One of the big -- one of the problems is correlation and causation, and another problem is, you're actually looking at -- you're looking at Comcast's carriage of its own stuff, not the carriage of the stuff that it's supposedly foreclosing. What you want to look at is, did they carry more other stuff? That's what you really care about in this.

Whether they carry more of their own stuff or not isn't important, when they carry a lot of other stuff. If they carry a lot of other stuff, then there is, and they only have a small share of the viewing on their own stuff, then whatever they do, other stuff has a chance to get there and viewers go to the other stuff.

So, I don't think the Goolsbee model, it might be good when you have 12 channels, but not when you have 300 channels and 90 percent of them are unaffiliated.

DR. KWOKA: Paul, can I just say one thing?

MR. LaFONTAINE: Sure.

DR. KWOKA: Counting the number of channels is not really quite the right metric for whether there is distortion of incentives or foreclosure.

The issue is not what Comcast NBCU, Comcast carries. The issue is what channels is it not carrying, what channels it has chosen not to carry, because of overlap with this internally generated programs.

So, this is, as Mike says, a deeply factual issue, but I think it's important to understand what the right facts are.

DR. ROSSTON: Right, but if you -- what you're not carrying, but when you have 300 channels, the chances of carrying something that's going to mostly go to your own stuff is pretty small. It's there -- when you have 30 different Hispanic networks, the 31st isn't going to -- you -- blocking out that 31st isn't going to drive everybody to you. It's going to drive them to the other 30 Hispanic networks and everything else.

That's the theory of the Goolsbee model, doesn't take that into account. It kind of looks at the wrong question. It says "are you foreclosing? Well, no, look, we can't figure out if we're foreclosing, so, let's look at what you do carry of your own stuff."

So, I don't even want to buy into the fact that the Goolsbee model measures the right thing.

MR. LaFONTAINE: Okay, we'll take a look at the facts of the case and I'll turn it over to David, now.

DR. WATERMAN: Okay, thanks. I just want to seek the advice of the panelists on an issue involving program license fees.

I know this is a very contentious thing in the record, but --

MR. LaFONTAINE: Hillary's nervous.

DR. WATERMAN: Let's say that the merged firm would pay lower license fees for programming. The applicants cite **{{ }}** in costs and say, the consumers would benefit because of the eventual lower prices.

But others, notably Professor Kwoka, suggests it's a harm, that lower programming investment would result, because of less money going back to the industry and there would end up being lower quality and variety of programming, and how should the FCC think about the potential declines in license fees, a benefit, a harm or something else?

Professor Kwoka, I characterized what you said, so, I better let you contradict me first.

DR. KWOKA: First off, I think it's important to recognize that there appears to be substantial agreement that program costs differ by MVPD size.

I think Mike and Greg do -- I think I'm quoting your correctly, when I say you do not dispute this. You have an alternative interpretation of it, but I think you're in agreement that program costs across MVPDs differ with size.

DR. TOPPER: Well, I think we need to be careful about that -- there is not a simple relation, -- -- we can talk about what the shape of that curve looks like, and what's relevant for this transaction.

I think what we would agree with is that the larger MVPDs in some circumstances, for some networks, pay lower fees than do small.

But from our perspective, that's not what's transaction-specific here. What's transaction-specific is that TWC and Comcast are already both large MVPDs, and whether and to what extent the combined company, going from 22 million to 29 million MVPD-subs, would lead to an additional lowering of prices.

DR. KWOKA: I think I would agree with most of what you said, and certainly the last point. That is the operative question.

It is informed by what we see in the differences between program fees per subscriber, in the range of experience that we do have.

Kagan data shows pretty clearly, that Time Warner Cable and Comcast have lower license -- low program fees per subscriber than the other four MVPD's that they enumerated in the document that we've seen, about 20 percent lower than the average of the other four, and that's consistent with industry experience, with comments from observers, from analyst reports, from a smattering of other data, it seems to me that that's, I think sort of as close to a fact that we might agree on, as we have here.

The interpretation is important, and that's what I was saying, and I think I was trying to be fair to you guys, because I think that that is where we differ, what that means.

So, if the program costs are different, they can be different for one of two reasons. I think there's only two categories. This is something I've just learned today from Greg, and that is there could be either supply or demand, I guess.

DR. ROSSTON: I'm glad I could teach you

supply and demand.

DR. KWOKA: But Comcast itself contends that the marginal costs are zero, and as a result, this is not the result of differences in short-run unit costs. In fact, for programs, this may well be not only constant costing, but as they say, zero.

I should say as a side note, that I've also pointed out that the short-run in this industry is very short, of programs expire typically from season to season, and some have -- many have zero rerun value and so, this is a very short cycle.

But be that as it may, the short-run costs may well be zero. That means that the differences in prices that we see are differences in willingness to pay, and behind that lies some bargaining model as to what the contract price is.

So, what is the contention I think, of many program suppliers, not only Spanish language program suppliers, but on the record, many others, is that the effect of letting Time Warner Cable and Comcast combine, will be to drive down further, the program cost, program fees that they get.

How will that manifest itself? Well, on the record, in Congressional hearings the head of the Writer's Guild of America had a fairly interesting anecdote again, if you will. The data are what the data are, but the question is, how does this play out?

That individual recounted the -- his experience and that of the many writers in the Writer's Guild, which is that over time, what's happened to the -- you know, the small guys, is there -- is there marginal program suppliers, is that more and more of what had been compensated services were simply devolved to them without compensation.

So, more and more of them were doing more and more work that previously had been either compensated or done upstream, and the result was that more and more of them were financially marginal.

So, this is the way that the -- they get squeezed. Some of it manifests itself in lower compensation, and some of it may be just a re-definition of the amount of work that is required in supplying it.

But the net result is that rents are extracted more fully and both in the short-run and the long-run, there are harms ultimately, to the -- to subscribers and viewers, who are -- no longer get a vibrant and financially viable and innovative supply sector.

DR. BIGLAISER: Just to remark, I'll be quick. Just to add a somewhat different view of the harm potential.

While I agree that I think most of us think that Comcast is going to have more bargaining power and get lower prices, and that some of that might get passed on to some of their customers, but Comcast is not going to pass on all that savings and it's going to increase the profitability per subscriber, which from our point of view, increases the opportunity cost of selling programming to rival MVPDs and any of the benefits from lower programming costs increases the incentive to Comcast to raise prices on their programming to rival MVPDs, because there is a higher profit --

there is a higher opportunity cost to selling programming.

DR. ROSSTON: So, you know, I think this is not merger-specific. The first order question is that Comcast is already big. It's already the biggest buyer. Is growing going to give it more ability to get a better price, and there is no evidence either way about this question, whether adding Time Warner -- the net-subscribers it's going to get -- is going to lead to lower prices. So, we don't have any evidence on that piece of it. I think that's important.

For program providers, there is a huge open field that they can sell to, and they have an incentive to keep up their quality for a number of reasons.

One is, they will re-negotiate with Comcast again in the future. Two is, they make a lot of their revenues from advertising. Three is, they deal with all the other program buyers in the world.

So, this is -- all these things are

important factors whereby they need to take this into account, and so, I don't think that we have any sort of merger-specific issues here. It's sort of Comcast is big already, and these issues are important, but understanding what programmers it can sell to is really important. You know, it's a worldwide market for programming.

MR. LaFONTAINE: Okay, well, in the interest of preserving at least a bathroom break, we're going to wrap it up now.

DR. ROGERSON: That's a 30 second bathroom break. We'll take like a five to ten minute break, come back as quickly as we can.

Thank you very much, to all the panelists.

(Whereupon, the above-entitled matter went off the record at 2:57 p.m. and resumed at 3:07 p.m.)

DR. GREENSTEIN: So, we're going to start off with some remarks about benchmarking and then we'll move to some efficiencies.

DR. ROGERSON: Yes, very, very quickly,

we want to spend just a few minutes on benchmarking.

What do we mean by benchmarking? Well, here is maybe two different things we need. I'll distinguish between two different kinds.

Public benchmarking occurs when a regulator has authority over multiple separately owned firms operating in separate regions of the country, and is therefore, able to compare the actions in performance of these somewhat separately owned firms, as well as to receive information from multiple somewhat separate sources.

Private benchmarking occurs when multiple separately owned firms operate in separate regions of the country, and customers of one of the firms in one region of the country become aware of technological approaches or business models used by firms in other regions of the country, and then pressure firms in their own region to adopt similar practices after learning that such practices are possible.

Okay, my question -- a number of the commenters have raised the issue that one or both types of these types of benchmarking, there will be fewer opportunities after the merger.

Do you have anything to add to my little summary of what benchmarking is or tell us why you feel it's a concern? Then I'm going to ask the other side to respond.

DR. FARRELL: Sure. Well, I think, you know, generally, it's a matter of using comparisons to learn about what's feasible, what's optimal, what's efficient, in ways other than a product market -- which is itself, a comparative performance scheme, if you think about it.

So, in a competitive market, sales go to the firm with the lowest costs, the best product, and that's largely, not entirely, a relative performance scheme.

Benchmarking is other ways of implementing relative performance evaluations or use of that information. You mentioned some specific ways. I think those are -- those are important, but it's a very broad concept.

How is it useful in its context? It's

sometimes hard to predict, but you know, in the analysis of this proposed merger, we've seen it used in the consumer satisfaction data. We've seen it used in the interconnection pricing data. We've seen it used in how to evaluate the breakdown of rapid delivery of Netflix content.

So, just in this one little -- well, I shouldn't say little, in this one enormous investigation, we've seen it used in several ways that I can think of, and maybe in others. So, I think it's a pretty broadly useful thing.

DR. ROGERSON: Okay, would someone like to -- from the -- your side, take a stab at this? Something to say?

DR. ISRAEL: I mean, I'm not exactly sure what I'm reacting to.

I mean, I don't disagree with the idea that benchmarking can be useful. I mean, we've seen benchmarking for example, in the Netflix speed index they put out or in customer satisfaction surveys that are used in other ways.

I mean, I guess the question about the

merger is more sort of, is there a loss of one benchmark and would that have any harm, and I think the recent examples we've seen from say, the Netflix speed survey as an example, had an awful lot of benchmarks in it. And so, I would think sort of similar to what you do in any competitive analysis, you'd ask if the loss of one of these parties would substantially have changed the ability to do that benchmarking exercise, and I think it seems when you look at the size of that list or the set of ISPs and MVPDs out there, for some purposes, international comparisons for others across ISPs, MVPDs, I mean, sure, you want plenty of benchmarks, but I think it's pretty clear that we have a lot.

DR. FARRELL: So, the number of benchmarks is one measure, but of course, benchmarking is weakened and sometimes gets challenge --- sometimes correctly --- if the benchmarks you're using are not adequately comparable.

And so, it seems to me you do lose some benchmarking power when you create someone who is much more different from the nearest size competitor or comparable.

So, I think we will lose something significant. Yes, we won't completely lose the ability to benchmark, of course not.

DR. ROGERSON: David?

DR. SAPPINGTON: I think in an important sense, we may be losing the best benchmark of Comcast behavior, given that Time Warner is the second largest cable company.

So, not only do we create a new situation, but we don't have a comparable benchmark, but we're losing perhaps, the best benchmark at the moment.

In addition, I think benchmarking is extremely important in settings when you have evolving industries, rapidly changing industries and industries that are quite complex in many ways, including all these interconnection issues. So, there having benchmarks is extremely important for regulators.

DR. FARRELL: And if you go back to the

MFJ, as I understand it, I wasn't involved at the time, the Justice Department thought it was pretty important to have a range of benchmarks available for fundamentally interconnection type issues.

DR. ISRAEL: I mean, obviously, it depends on what purpose you're benchmarking for. So, I mean, it's not as obvious to me, why the largest other cable operator -- I mean, one thing you might want to do is think about, as you said, Bill, technologies and things that are rolling out and the way people are introducing new technologies and servicing their business, in which case, I think you might want to look across cable operators, but I think the cable operators that exist would provide good benchmarks for what other cable operators are doing.

For other purposes, you might want to think about how large ISPs are -- under different competitive conditions perhaps, are treating, you know, other players, and I think then the other ISPs, including the telcos would obviously be relevant benchmarks for how they're behaving competitively.

So, I don't disagree with the concept that there could be some value to benchmarking. I just think given the range of cable operators, the range of ISPs, the range of international technologies you could look at, that there is -- I just don't see a risk, that this transaction will reduce -- significantly reduces the ability to benchmark.

DR. ROGERSON: Okay, great. So, now, we're going to move onto the main act, which is efficiencies, and I'm turning it over to Shane.

DR. GREENSTEIN: All right, so we -- you know, there is claims for various efficiencies for this merger and how should the FCC think about, generally, the general claim that is often repeated of $1.5 billion efficiency created by the merger. So, let's take that a couple pieces at a time.

First, before we take each piece, let's ask just a general broad question and clarification, are these annual savings? And what are the integration costs and how big are those costs and how are those calculated into the savings? And since there has been some time since the first estimates for the efficiency estimates, since they were first made, there has been considerable work we would imagine, on integration costs and efficiency gains and losses, and so, we would like the panelists to state if they know, if they're aware of any updates to these estimates, both for efficiencies and integration costs. And in some sense, we want to start at an open-ended sense, because it's such an important topic.

DR. ROSSTON: So, let me address this at a high-level. They've announced some expected cost savings on programming that was going to come from **{{**

}} to Comcast's prices, but they were not changing prices. The other efficiencies from this merger that we've been commenting on have not been quantified. That model, I think, was **{{**

}} a year.

So, that's where you get some of your number over five years, I think, just from that piece of it.

The other efficiencies that we've been talking about, big picture efficiencies, are from the ability to fund -- to have more fixed -- more customers over which to spread fixed costs for innovation, to provide business services, to provide other things like that.

So, we -- these are efficiencies that have not been quantified --

DR. GREENSTEIN: We’ll get to those.

DR. ROSSTON: -- and don't go into those numbers.

DR. GREENSTEIN: Yes, yes, we'll get to those. Just for the time being, let's focus on the --

DR. ROSSTON: But they -- they are continuing to work on the integration plans and thinking about. I don't know the details and I don't know if any of us know the details of what exactly they're doing and what they're thinking about the costs on integration.

DR. GREENSTEIN: All right, anything from here, or just go into --

DR. SAPPINGTON: Just a question. It's not crystal clear to me why that's necessarily an efficiency, that Comcast will get lower programming costs?

DR. ROSSTON: He was asking -- he was talking about the cost savings. I was trying to explain where the cost savings came from. That's -- you're right, that's a transfer.

DR. SAPPINGTON: Okay, thank you.

DR. EVANS: Maybe if I could make one comment, which I think -- I thought was embedded in your question, but I'm not sure I heard the answer to it, which is so, you have all these specific efficiencies, and I guess the question is, where are there specific inefficiencies? I mean, are they rolled into the estimates that you're calculating?

You mentioned the cost of integration, which I would take as a specific inefficiency, but that one and others, are they in the calculation somewhere?

DR. ROSSTON: I assume they're working

through all of these. They have ideas of what the costs are for head-count and other things like that.

I don't -- we're not --

DR. EVANS: But generally, you'd expect that a merger of any two businesses would -- you know, might yield benefits, might yield inefficiencies and that is sort of generally what you see in economic studies.

I guess what I'm curious about is, you have a list of specific efficiencies, and I'm interested, whether there was an investigation of specific inefficiencies, or whether those were netted out in other things that you did, and Shane's question concerning cost of integration, I thought was just an example of that. That's all.

DR. ISRAEL: I mean, there is a difference -- I mean, I think some of what's going on is because most of those efficiencies you're talking about in that number, we would say are fixed cost savings. That has not primarily been the focus of the economists sitting over here.

Our focus has been on the sources of

consumer benefit from the transaction, and on those, we tried to do a study of the ways in which the transaction would benefit or, in theory, harm consumers, to think about all of the above, but I am personally not --

DR. GREENSTEIN: All right, let's get into some detail, then we'll see if you have more specific things to say.

I mean, there -- it is in the record that there's $1.5 billion claim of efficiency here, and so, we're just -- we're trying to understand precisely where that's coming from.

So, for example, there -- we'd like to know how the FCC should consider savings in corporate overhead, and for -- you know, to what extent should -- is that to be passed on to end-users. And if you believe some material fraction of this amount will be passed on, can you provide some evidence of about how much of the past reduction and fixed costs Comcast has passed onto to the end-users?

So, let's start with your side, and then we'll get comments from --

DR. ISRAEL: I can speak for myself. So, in the efficiencies that I -- or the consumer benefits that I've put forward from the transaction didn't include any benefits from overhead savings.

DR. ROSSTON: We didn't look at the corporate overhead savings, in terms of looking at our efficiencies in our analysis. Those might well be -- they may add to it, but we don't think they're going to subtract from it.

DR. GREENSTEIN: Okay, well, we can move -- without -- I'll just keep going through.

Then how should we consider -- yes?

DR. SAPPINGTON: On the issue of what will -- what if -- what would be the impact to these efficiencies, I'd just like to quote one of the Comcast executives, David Cohen, who says, "We're certainly not promising that consumer bills will go down or even increase less rapidly."

So, where the consumers might benefit from these efficiencies is not clear.

DR. EVANS: Well, if I could just add to

that, and maybe just ask a question again, which is, maybe I missed it, but I mean, Mark, you said something about looking at consumer benefits and so forth, and again, maybe I missed it, but I don't think I saw something in there that at least specifically showed how these specific efficiencies you guys are talking about leads tangibly to benefits to consumers.

I mean, lower prices, better customer satisfaction, I mean --

DR. ISRAEL: Yes, I mean, I think we --

DR. EVANS: There wasn't any discussion really of pass through and I don't think --

DR. GREENSTEIN: Yes, we're going there.

DR. EVANS: Okay.

DR. ISRAEL: There was a tangible discussion of price reductions and competition savings from increased business services. There was a quantification done on the value of speed increases. There was a quantification done on the increase in WiFi hotspots.

DR. GREENSTEIN: Right, we're going to all those things. Okay, so, in the interest of keeping this organized, let's keep going.

How should the FCC consider, in this case, close to **{{ }}** in savings in programming costs? I mean, I heard you to say it was a transfer.

We've heard from various parties that these are both harms and benefits, that this also just discussed, is that it? You know, should we consider that -- that they net out, that we should assume nothing? Why or why not?

DR. ROSSTON: So, this is -- so, I said it's a transfer, but it also is reduction in the marginal cost of serving customers.

So, that presumably when a marginal cost decreases, this is something that redounds to the benefit of consumers, either whether you have market power or not, economic theory tells you you're going to pass through some or all of the change.

So, that program savings should show up in consumer benefits.

DR. SAPPINGTON: But then why would your -- why would an executive from Comcast say there is absolutely no promise that any prices will be coming down, or even increasing less rapidly?

DR. TOPPER: Well, I think we have to take his comment in context against the environment where programming prices -- wholesale programming prices are increasing. They're increasing for all MVPDs, including Comcast, and they've increased considerably over the last decade and the last five years.

And Comcast, like other MVPDs, is dealing with that issue. So, he's not making -- when David is making that statement, he's not making some "but for" statement about what is the effect of this transaction on the future path of prices. That's the relevant question.

DR. ISRAEL: I mean, there are many public statements about planned increases and spending on R&D, on capital expenditures, in bringing the Time Warner network up to Comcast speeds, on rolling out WiFi. That's the focus of the transaction, and all of that has been said publically repeatedly, right?

I think he's saying the cost savings are just one piece of it, and as economists, we can evaluate whether we think they'll be passed through. It's not the primary focus of the merger, and I don't -- in front of a hearing, he doesn't feel what that -- you know, that side -- he wants to make a promise.

DR. GREENSTEIN: All right, let me sharpen this a bit, because we just heard in the last panel, there's a potential harm from less incentive to create programming, because there is less money coming to the programmers, by virtue of the decline and the -- what we have heard is the claim that we will see less programming expense in the Time Warner area -- to Time Warner customers relative to what they would have paid otherwise, and that's going to be a direct savings of **{{ }}**.

That comes out of the pocket of a potential provider of content. Do we -- so, I understand your remark about pass-through to the user. We have also heard from others say that the taking -- reducing incentives for producing content should be considered a harm, so that the FCC should balance those two things.

How should we think about that? That's the question I'm asking, to sharpen it very directly.

DR. SAPPINGTON: So, one other element of that issue is also what Gary Biglaiser raised in the last panel, showing that if, in fact, Comcast does not pass on all of the savings, they will have a higher profit margin on their MVPD video service -- MVPD video services, which would increase their incentives to sabotage competitive OVDs.

DR. ROSSTON: So, this is -- well, you said, I think I disagree with a lot of what you characterize as -- almost characterize as conclusions from the last panel.

These were theories from the last panel, as opposed to conclusions from the last panel, that -- you know, that for -- first of all, this **{{**

}}. It's not sort of what's going to happen going forward to {{ }}, and we need to think that -- you know, that program prices have been rising rapidly.

So, what -- and finally, the idea that there are lots of different revenue sources for people. So, I don't think there is going to be a major effect. This is not -- it sounds -- it's a big number to me, you know, in terms of -- you know, I'd love to have }}, but in terms of the total marketplace, it's not that big a number. And it shouldn't have that big an effect, and given that most -- that these -- that it's not affecting most networks, it's probably not going to have a big effect on the expenditures and creation of programming later.

DR. CARLTON: That's an important point that I had tried to deal with this morning. If you're worried about monopsony or bargaining power -- and taking David's -- you know, is worried about that -- Sappington -- in his statement.

You have to ask the question -- you have to distinguish between paying for old programming versus paying for new programming. It's the paying for the new programming that it will -- that David presumably is worried about, that will create adverse incentives.

And then to understand that, you have to ask the question, am I really able to do that, and that has nothing to do with market shares in a broadband market. It has to do with your share of content buying, and you know, my view is, I have not seen anything to suggest that such power is going to exist on the buying side in the content market, and that's what you would really have to show moreover, because high quality content is a complementary product.

You would have to ask, would it be in the incentive of Comcast to degrade say, the quality or the amount of output on the new product side, and if that was happening, wouldn't they invest themselves, and in a sense, vertically integrate to create the new content.

So, I think the effect on content is really just speculative right now.

DR. GREENSTEIN: Okay, last comment and then we'll move on.

DR. FARRELL: So, it seems to me -- I mean, I don't think this is a full answer, by any means.

But it really seems to depend on the source of these price reductions for programming. If the merged firm is better able to ensure vigorous competition among programmers to get onto its network, then -- and get to better price as a result of that more vigorous competition -- that seems to me, is a competitive benefit and/or efficiency.

If it has some form of hold-up power, such that it can extract quasi-rents due to success or investment by the programmers, then that's probably a harm. I mean, that is a harm and probably is overall a harm.

So, I think somehow, you need to try to figure out what you believe the source of these price changes is rather than saying there are going to be price changes. Is that a good thing or a bad thing?

DR. ISRAEL: Just to be -- I mean, I want to build on that, I'll take but 10 seconds.

I mean, another possible source, and we put some evidence in for this in my earlier declaration, is if the combined firm were say, better at generating advertising revenue for content creators, then they would generate surplus that way and there would be a natural sharing of that surplus. So, it might lead to the reduction in the amount of the price that they would charge Comcast for the content.

So, I mean, to the extent there is an improvement in advertising technology, that would be another source, I think you would agree, would be a benefit.

DR. GREENSTEIN: Okay, let's keep going. I mean, another dimension of this is operational efficiencies, and again, how should the FCC think about passing on operational efficiencies from the merger; in particular, how should the FCC think about the likelihood that the efficiency will be passed onto users in the presence of few substitutes for cable television or broadband service, and first of all, we could just talk about that in general.

We could bring up a specific slide, as well. How do we do that? There it is, okay.

DR. ROGERSON: Say I would like the slide to appear.

DR. GREENSTEIN: I would like the slide, there it is. **{{**Contents Redacted**}}**

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So, we can start -- we can start with

somebody. Everybody is --

DR. EVANS: While they're puzzling over the figures, can I --

DR. GREENSTEIN: Sure, go for it.

DR. EVANS: -- ask a more competition question, because Dennis said something before that -- I mean, maybe he misstated things, but since you've raised the competition thing, I wanted to make sure that we were clear on this.

I heard you, Dennis, before saying, and I may have mis-heard you, that competition is more intense in broadband than in MVPD. Did I just mis-hear that statement?

DR. CARLTON: I don't know what you're referring to, David, but I'll tell you what I think it was.

DR. EVANS: Okay, that's fine.

DR. CARLTON: What I was talking about, what I think you're referring to is -- I think it was you who pointed out -- maybe it was someone else, that there was these Board meetings at which -- and you were talking about the Board meeting, in which you were saying they're inconsistent with what I said, and it was in that frame, in which I said, "Listen, it's not inconsistent at all."

What it's consistent with is -- mine was a theory why foreclosure makes no sense if you assume monopoly in broadband, and I'm saying, **{{**

}} but an alternative interpretation, mine, is that it's **{{**

}}, and if you have competition in broadband, **{{**

}} and that's what I said.

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So, it actually confirmed what I was speculating about.

DR. EVANS: Okay.

DR. CARLTON: So, that's what I meant.

DR. GREENSTEIN: All right, I'm going to be told very quickly by somebody, that I allowed another topic on this -- we're here to talk about the effect of pass through of operational efficiencies. So, let's go to it, nothing else, all right. Yes, please?

DR. TOPPER: So, I have to turn my neck way around, so it's a little hard to see the details. But these appear to be about what's going to happen in the retail market for consumers, and so, in thinking about that, it's good to remember that the central fact of this merger, which is there is no change in competition for retail consumers.

A retail MVPD customer has the same number of options before and after the merger, same for broadband, and to the extent that the efficiencies that we've written about and are going to talk about, faster broadband, advanced video services, network efficiencies and so on, are realized, we've got good -- you know, all of economics says that those are going to be passed through, not 100 percent, but they'll pass through and you would expect that Comcast is going to want to achieve some profit for that.

But these are going to be things that are going to be passed through, and Comcast is going to need to continue to compete with its direct rivals for MVPD and data business.

DR. GREENSTEIN: Okay. Yes, Joe?

DR. FARRELL: So, an Econ 101 point that sometimes gets forgotten, and I think you forgot it there, Mike, is pass through, even 100 percent pass through, even 200 percent pass through, which is very possible, is not in tension with realizing additional profits.

By the envelope theorem, you can calculate the additional profit as if there were no change in the profit maximizing price, and so, even if you've fully passed through cost savings, you still capture them. It's kind of econ magic to some people, but I'm sure you're familiar with it.

DR. ISRAEL: For more than passing

through cost savings, I have to explain to attorneys fairly often.

But I mean, I think -- and these are revenue synergies used in a situation where there is -- you know, I think there hasn't been any disagreement, there is no reduction in retail competition.

Normally, when we see revenue synergies, we think, "is that a reduction in competition, or is that an increase in quality?" Here, we only have one of those explanations, I believe. So, this is the Comcast side benefit from the quality improvement.

DR. SAPPINGTON: I'm not sure I'm reading the chart properly, but it seems that perhaps there are – **{{**

}}. Is that up there? It's hard to interpret.

But at best there, I think what we need to be very careful about doing is attributing all of the alleged upgrading of the Time Warner system to Comcast, because you look at Time Warner's plans going forward independently, they plan to upgrade these systems all on their own.

So, in fact, if there is any benefit here, it would be, at most, a temporary speeding up of the process, but what we're worried about, and we need to trade that off against the long-term benefits that are -- costs that would arise from allowing this merger.

DR. ISRAEL: I mean, it's true, both Comcast and Time Warner continue to invest in their plans, right? I mean, we know from the same documents, that Comcast intends to increase the investment in Time Warner's plant by **{{**

}} relative to Time Warner's own plans.

So, what we're seeing today is Time Warner basically, catching up to where Comcast has been for the last couple of years, and the point going forward is Comcast intends to accelerate that, both for Comcast and for Time Warner.

So, Time Warner is getting to 50, just as Comcast is moving to 100.

DR. SAPPINGTON: But I think the point

here is that Time Warner is going to fully upgrade its network by **{{ }}**. If we get **{{ }}**, it's not clear that that's worth very much, in terms of the --

DR. ISRAEL: I don’t know what fully upgrade means, I mean, when we're talking about how fast we get to digital, how fast we get to DOCSIS 3.1, how fast we get to CCAP, all of those things are continued innovations that Comcast and --

DR. GREENSTEIN: All right, we're headed to that topic in a minute. I would just -- before we leave this slide, I just -- I just don't understand it.

So, it would be nice to get either side to help us understand it. **{{**

}}?

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}} How should we

interpret that? I mean --

DR. ISRAEL: It's a revenue synergy, right? That's what I said before. It's the specific way they're going to implement additional revenues, and the revenues are generated by the increased quality they can offer to the network. There is no --

DR. GREENSTEIN: I mean, we could go item-by-item. You know, there is clearly some things here that we could say. There is an increase in video-on-demand and they're anticipating -- that's a very direct quality improvement. **{{ }}** We're just trying to understand.

DR. ROSSTON: One example, just -- I don't know if this is what it means, but I have a Comcast modem. It's got a -- it's got Xfinity and WiFi on it. It may be a different quality modem. I don't know how they're -- I haven't seen this and don't know what they're doing.

But there may be different explanations. But I think the real point is, they're not changing what their local competition is. They need to invest and compete with others and just trying to convince people to do -- to take the broadband service and to take the video service, because they have competitors in both.

DR. SAPPINGTON: Well, I'm still a little confused like Shane -- in terms of what that diagram is showing us, and I also don't understand what revenue synergy means.

DR. ISRAEL: It means that --

DR. SAPPINGTON: Is that rent extraction from consumers?

DR. ISRAEL: No, it means as a result of the transaction, the firm will make more revenue, and in this case, we know there is no reduction in competition. The plans on half of the -- on the firm are to make more revenue by delivering a higher quality product.

I mean, pass through of quality is in savings and pass through of cost savings are quite similar, and in some cases, mathematically identical, and in both cases, we would expect if there is some improvement, there will be some increase in revenue or some reduction in price, and in then pass through to consumers.

So, the company is going to make some more profit, some more revenue, and the firm is going to make -- and the consumer is going to capture some of that increase in quality.

This is a very detailed plan for the revenue part of that equation.

DR. SAPPINGTON: Or another possible interpretation might just be that Comcast is better at extracting consumer surplus than Time Warner?

DR. ISRAEL: No, I don't have any basis in economics to think that Time Warner isn't capable of maximizing its profits.

DR. GREENSTEIN: Okay, last one and then we'll move on.

DR. EVANS: So, I think that, you know, all of this is possible. I think that the problem that I guess have with the efficiency argument, and I'll just take a second on this, is in terms of what the FCC needs to do, it seems to me that because there are pluses and minuses here, it actually depends whether the pass through is like zero, whether it's like 100 percent. So, knowing the pass through rate here seems like it's a relevant piece of information.

But I guess more to the point, I guess the thing that I find missing from the record here and it's surprising, is any kind of systematic economic studies of what pass through has been historically from all these -- from previous mergers or things Comcast has done, I mean, so much of this is, economic theory says there's going to be pass through.

We have efficiencies, therefore, there's going to be pass through, therefore, everything is going to be grand, and you know, that's all possible, but in this kind of thing, I guess I would have expected to see, you know, something more in the way of a rigorous economic study of that to document that these sorts of efficiency things have, in fact, been passed through to consumers in the past, either by Comcast or by similarly situated companies.

DR. ROSSTON: So, there's a lot of evidence that Comcast has upgraded systems substantially when they bought them in Adelphia and other -- I mean, just look at what Comcast is offering today.

Mark just talked about how much their broadband is faster than others, how they're introducing stuff more rapidly.

These are all functions of what has happened to get Comcast to where it is. It has the largest VOD library. It's got -- it's offering more unaffiliated programming. It's offering lots of different things that are in quality, that are hard to measure in a systematic regression analysis that you'd want to see.

But I think those are important things to consider in terms of thinking about what kinds of efficiencies come through from a merger. These are the kinds of things we're talking about in this case as well.

DR. EVANS: Could I just do one follow

up on that? I'm sorry.

DR. GREENSTEIN: It's uncovering useful things. So, that's fine, keep going.

DR. EVANS: Okay, so, I take that, I take the difficulty of it, but I think where the struggle is here, and you know, perhaps Joe wants to talk more about this, is **{{**

}} which as you all know, is my new best friend.

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So, you know, you can debate how good evidence that is and so forth, but the puzzle here is, you have this company that has grown through mergers and organic growth over time, presumably should have realized all of these fixed cost efficiencies that you're talking about, yet you don't seem to see it in things that ought to be, you know, you could argue how good it, but you know, ought to be reasonably good measures of consumer welfare.

While I wouldn't put all my weight on J.D. Power, the fact that I don't have an econometric study or anything rigorous on the consumer side, I guess bothers me a little bit.

DR. CARLTON: I was just going to say, I didn't study benefits, but just to react to this.

You know, I read what people have said. Seems to me, looking at a survey to figure out if it's going to be good or bad, I mean, this is -- there are many aspects to a product, speed for example. People talked about how fast Comcast is.

In terms of surveys, if you're asking does Comcast have a good reputation or could it improve its reputation on how it deals with consumers? You know, I haven't studied this in detail.

My suspicion is, they could, and my understanding is, they intend to. That has nothing to do with the -- I mean, that's not merger-specific.

That's just an observation that in light of the products they're providing right now, they likely have an incentive to improve dealing with consumers.

In fact, it's my understanding, they created a position, a senior vice president. They appointed Mr. Herrin, who will -- was involved with the X1 development, and the point of that is to improve dealing with consumers.

So, I kind of take the point that it may well be true that they're not coming out at the top of consumer satisfaction, but that doesn't mean that they don't have an incentive to improve.

They are improving. They do recognize that as a concern. But to say that means that a product they're providing is no good, I mean, all these surveys I've seen, I mean, you know, tabulations, show that they have pretty high speeds.

So, I mean, you just can't look at one aspect of a product characteristic and not others.

DR. GREENSTEIN: I'm pretty sure we're going to get to this, but we also need to get -- to make sure we get down the list. So, let's keep going.

How should the FCC -- let's go to the next topic. We're going to talk about investment now.

How should the FCC think about post-merger investment by Comcast in the footprint previously governed by Time Warner Cable?

So, since Time Warner Cable is already making aggressive investments in Time Warner Cable Maxx and other great upgrades prior to the merger, how much more investment will Comcast make that Time Warner Cable would not have otherwise made in the absence of the merger, and how should the FCC think about the impact on the rate at which the broadband is upgraded?

So, let's put the question out there. Okay, Mark, you've been biting at the chomp to get at this one, so let's go for it.

DR. ISRAEL: I think you have to break that down by category of investment, I mean, and I think your point that you should think about, I mean, while Comcast saying they're going to spend

{{ }} I think is relevant. As economists, we should think about the economic incentives behind that.

I think they vary from class to class. So, I'll just give a few examples.

One that I think is very important is on the business services side, where there has been substantial analysis that basically says the companies -- the way they ordinarily think about the opportunity to serve multi-location businesses is that those -- there needs to be a substantial number of sites within their combined footprint.

So, they often use a number like at least {{ }} percent of the sites need to be within footprint today to make us have a chance.

If there are at least {{ }} percent and they look at the hurdle rates on their return, then they'll bid on that, and if they win, they'll build out -- they'll invest -- in order to reach the rest of those sites.

So, we know that quantification is still going on, but you can just look -- you know, look at the combined footprint of the two companies. There is a substantial increase in the number of businesses that meet that standard, such that they would bid on that, such that there's an incentive to invest, to serve that business.

I would note that that investment we're talking about is investment in the core Comcast broadband plant, and therefore, also benefits residential consumers in those same areas. That's one example.

A second example would be WiFi. Right, there's a difference -- there's some difference in funding --

DR. GREENSTEIN: We're going to that.

DR. ISRAEL: Well, that's another form of investment, right? There is some difference in philosophy on WiFi. There is also the fact that you're thinking about how much WiFi to build out in the Time Warner area in New York.

One reason you might build a lot is because you have subs all over the country who are going to travel and make use of that, and we know in any sort of mobile setting, that being more national creates a stronger competitor in order to serve that national business.

One more example -- we could do more. Another example is, I mean, this is where the economies of -- the ability -- the economies of scale point comes in, and it's important, what it means here.

Now, when Time Warner makes an investment within its territory, it's not just that it's smaller. The investment is physically locked only to its territory. It has a limited number of customers it possibly can reach.

Comcast has a broader footprint. As a result, Comcast has, you know, a thousand R&D employees and invests more than a billion dollars a year in R&D and has rolled out things like X1. All of those are fixed cost investments that Time Warner would have to evaluate on a much smaller scale than they will as part of the combined firm.

We could do more. I don't know if you want me to keep going, but I mean, you can work through these.

On the speed investment, some of that is the sort of -- the fixed cost piece of the plant. Some of that is that Comcast, with the experience in rolling out DOCSIS 3.0, has shown internally they've improved in their efficiency at rolling out those speeds, by learning over time, therefore the cost to them of continuing to make these roll outs is lower, based on the accrued experience, but I'll stop there, I guess.

But in each case, a situation in Time Warner is, as a result of being part of the combined firm, has changed in a way that incentivizes those investments.

DR. GREENSTEIN: Okay, Joe?

DR. FARRELL: So, when you think about efficiencies, the usual thing to try to do, even though we know that it's always difficult, is to look in detail at detailed plans and try to figure out in a very detailed way, is it credible that the combined firm will do these things? Is it credible that the pre-merger, absent the merger, the firms would not do them? Are they likely to be passed through to consumers, and that's a legitimate and important thing to do.

But it is also very difficult thing to do, I think perhaps particularly in telecom, because the real option from delaying sunk investments is often important, and so, predicting whether it will be worthwhile to do something a year or two in the future is an unusually difficult thing to do.

We know in general from the finance literature and from the business school literature that mergers often don't work out the way even their participants expected, let alone intended, let alone said.

So, it's very imperfect methodology, and everyone, I think who does merger analysis is -- I think in most cases, uncomfortably aware of that.

There is another source of information, as David was saying a few minutes ago. We have significant variations. I mean, a lot of -- not all, but a lot of the efficiencies that are being talked about are of the form greater scale, number of subscribers, and greater geographic scope, very collinear variables in this industry, will incentivize investments that will make consumers happier.

Well, we do have an opportunity to see whether the large cable companies that have had large scale and large geographic scope have, in fact, made consumers happier, and I look to that in my declaration, and the answer is not absolutely conclusive, but it sure seems more like a 'no' than like a 'yes'.

Now, Dennis points out, there are many dimensions to product and service, and I think that's exactly the strength of a summary statistic like consumer satisfaction, relative to looking at an individual dimension of performance like download speed.

You also pointed out, we wouldn't want to do a referendum on the merger, and I think that's right because that would be a question of sampling to see what individual consumers think the effect of a merger is likely to be.

But if we're talking about sampling to see what individual consumers think they are getting, in terms of value for money and are they happy about it, I'm sure it's an imperfect measure in lots of ways, especially when with imperfect surveys, but in some sense, it's trying to get at a summary statistic that is at least, trying to be the right one.

DR. CARLTON: Well, it is true, it's a summary statistic, but it's the wrong thought experiment.

The right thought experiment you want is holding all of the characteristics say, of Comcast constant, from a situation which, you know, time one versus time two, and you want to ask, is there an improvement, okay?

DR. FARRELL: From the merger, you mean?

DR. CARLTON: For holding constant, you know, speed and all these other things.

DR. FARRELL: Why would you hold constant, all these things that are supposed to change with the merger?

DR. CARLTON: Because you don't know what you're asking in the survey. What people are responding to may not be the whole package of characteristics.

What they may be responding to is, gee, I just got a call, someone was really rude to me on the phone.

Now, it's true, I only had to call them once and I've had service for 10 years, but dammit, I don't like anyone to be rude to me on the phone.

But then you say, "Well, would you rather be in that service, or would you rather have a very slow download speed, but boy, someone is a real sweet-talker on the phone?"

Well, that's kind of what you're asking, and when you're doing a consumer survey, what people remember is how people treated them on the phone. They're not responding about the full package.

The correct experiment would be if they had the choice of those two, you know, a sweet-talking customer service rep and low speed versus the high speed Comcast and, say, the less sweet-talking customer service rep, which one do they choose, and it seems to me, that's what revealed preference is telling --

DR. FARRELL: Well, I think you're raising two issues, right?

DR. CARLTON: -- you you're not --

DR. FARRELL: One is, a person who is being sampled might have just had a particularly salient experience. That's presumably random and there's no particular reason to think that you'd get more of those for one company than for another.

Another possibility is consumers, when they're asked about their level of satisfaction, in some sense, they put different weight on different dimensions of what they're getting than they really ought to and --

DR. CARLTON: Then it's reflected in their behavior. That's what I am saying.

DR. FARRELL: Well, that is reflected in their true utility.

DR. CARLTON: Yes.

DR. FARRELL: That's possible. That's part of why I don't regard this as a complete answer, but I don't think that rises to the level of, "Oh, you couldn't earn something from this," and I think --

DR. CARLTON: I'm not saying it's not informative. I think what is it informing, as I said earlier, is you know, they haven't done the deep study of consumer -- you know, the reputation of Comcast, but I am aware that it may not be at the highest level, in terms of consumer service --

DR. FARRELL: All right, we can --

DR. CARLTON: I think we certainly would want to improve that.

DR. GREENSTEIN: In the interest of time again, we're going to go back to the question here.

You know, Comcast has plans to upgrade by **{{ }}**, the new systems that it's -- I want to keep this focused on where we would like the question to go.

Time Warner Cable already had plans to upgrade and Comcast has said that it's committed to upgrading 100 percent of the acquired systems {{ }}.

How should the FCC think about that material, that difference? Is it material?

I mean, I'll even add, here is another one that's been brought up, your list of -- Mark, Time Warner Cable was already investing in IPv6. Should -- you know, and that was close to completion of upgrade. How should the FCC think about that one, as well?

DR. ISRAEL: I mean, I think you should look at, and we've gone through some of them, the differences in timing and evaluate, you know, a year of fast speed.

I mean, our claim is primarily not about something existing, you know, DOCSIS 3.0 or digitization, where it's been done. It's about the next generation of 3.1 or CCAP and all of these things that Comcast is now planning to do faster.

But I mean, the way I think about it, I mean, I ran through the specific list of things that they're going to do.

Well, we know in the record is their intent is to spend {{ }} more to upgrade these things. So, a fair question then is, I mean, that's a benefit if that happens. A fair question is, "Do they have the incentive?"

I ran through several reasons why the additional scale, the additional business services, et cetera, given the incentive.

I'd just like to make one more point on there, on Comcast incentive and why they're so committed to doing this.

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DR. GREENSTEIN: David?

DR. SAPPINGTON: Just two follow ups. First, on that particular point that Mark just raised, there are other documents where Comcast does say explicitly, {{ }}. So, we can talk about those if you like.

Also, in terms of the particular Time Warner upgrade that you had asked about, I think Mark, to answer this one, clarified that it is the case that if we're really talking about the upgrade for TWC Maxx, for example, to 300 megabits per second, it's going to be completed or projected to be completed by Time Warner by {{ }}.

So, if Comcast say, does that one year more rapidly, than otherwise would have occurred, I think the answer to your question is, at most, we're going to count that value to consumers of having things one year earlier, rather than --

DR. ISRAEL: So, let's talk about that for one second.

So, suppose Comcast gets to 300 megabits per second, instead of, I don't know, what do you want to call it -- one-hundred megabits per second? -- one year faster?

We put in evidence from the literature that says that every one megabit per second in total value across the Time Warner sub-base is worth $100 million in consumer benefits.

So, I mean, we're talking this morning about total contracts of **{{ }}**. We're talking about multiple hundred megabits faster a year earlier, that's worth $100 million a year in consumer benefit per megabit per second, per year.

DR. SAPPINGTON: Well, we need to look carefully at that study, because I don't think it --

DR. ISRAEL: It's done by Aviv Nevo and

co-authors and they value the benefits to consumers from megabits per second, and you, you can go through it and the top end values are much higher than that. We actually use the median across customers to come up with that value.

DR. SAPPINGTON: And are they saying that the relationship is linear, so, if you increase from 300 to 400, it's the same as going from 10 to --

DR. ISRAEL: No, it's not linear. You can go through and do it at that level. We did it at going one megabit per second above their current level. So, if they were to go more than that, it might slow down, but it would be more than that $100 million dollars per year that we quantified. We would multiple up by 200, that's a fair point.

DR. GREENSTEIN: All right, can we keep moving? All right, so, let's keep moving.

Next, we'd like to ask about how the FCC should think about increased incentives to invest and innovate due to scale. We've sort of touched on some of this already, but let's sharpen it and let's see if we can uncover more.

How should we think about incentives to innovate in scale, particularly in light of the general lack of consensus among economists about that economic relationship between scale and the rate of innovation.

So, we'd like to particularly understand how to think about the evidence in favor of the applicant's general assertions, that there will be an improvement, and what countervailing theoretical factors should be thought about that push in the other direction, such as a reduction in diversity approaches, which we also heard a little bit about earlier today.

And, do we have examples in either direction, where diversity matter or where it didn't matter or where the countervailing factors did or didn't matter?

We'd like to ask both sides to also comment on other thing.

We've heard about claims about the benefit of ownership, but we've also heard about claims in light of licensing programs, for something such as X1, and so, again, how should the FCC think about the differences between licensing out a technology rather than owning it in its own footprint.

DR. ROSSTON: That's a lot of questions.

DR. GREENSTEIN: Yes, well.

DR. ROSSTON: And you said it really fast. So, I'm going to address the idea of scale.

So, Comcast has invested in X1 and the theory, as Dr. Evans points out, is next, and as you pointed out, scale can cut both ways.

But in this case, we see that Comcast brought out this innovative X1 box and it's the biggest cable company, biggest MVPD and it was willing to invest in this. It didn't invest as much as it might have. We talked to people who said, "Yes, there were other things that we could have done. We could have brought it faster, if we had a bigger potential customer base."

So, we think that there are things that they're doing. Cloud DVR, other things, IP cable, where Comcast has said a bigger scale would have allowed us to put more resources into this, and get these investments to market faster.

So, there is some evidence in this case that there are benefits to being a bigger scale and bringing things to market more rapidly.

There were also things like advanced advertising services, that Comcast, with increased scale, can bring to the market better than it can without this scale of the additional parts of having Time Warner with them.

The other part is the advantages of scale within geographic areas, where they can have more efficient truck rolls and things like that, and regional network storage and other things like that, that they have the ability to take advantage of scale.

So, I'm not trying to debate the theory which can go both ways, but just show you that there are lots of examples and things that Comcast is thinking about in what it wants to do and what it has done in the past in mergers like with Adelphia and other things, where they built up these systems and they took advantage of it.

Finally, I don't know if we're going to get to it again, but business services is a big piece of scale. If you have bigger scale, you can serve on net, much more of the traffic and you become a much more credible supplier with much higher quality services that are all on one network, and Comcast feels that its customers really want this, and it thinks it can be a much more effective competitor.

Right now, it's providing competition for small and medium businesses within its footprint, to expand those, it thinks it can do much more when it has Time Warner's scale added to its scale.

So, there are a lot of different things that it thinks it can do with scale, and these are just sort of fact-based pieces of evidence.

DR. FARRELL: So, I think it is worth reflecting a little bit on how a firm can get scale, because there is no doubt that fixed investments are more attractive when you have more scale to use them over.

One thing you can do is contract with other firms, to use them, and you know, I think that's a process that does involve some frictions, but on the other hand, it's a process of reaching mutually beneficial arrangements that earlier, we were talking about Dennis's relative optimism, that kind of thing would happen.

So, I think that needs to be paid attention to.

Why couldn't, to put it more concretely, why couldn't Comcast convince Time Warner to use the X1 set top box, if I have that jargon right, without a merger? Why couldn't they convince Cablevision to use the X1 set top box, given that there's no merger even contemplated?

The other way you can get scale, of course, which we should not forget, is by offering customers a better deal until you get more of them.

That one, you know, is also one that I think when people start talking about the effects of scale on incentives to invest, people tend to say, "Oh, well, that's a little unrealistic, slow limited," but then that's somewhat in tension with arguments that there is lots of alternatives with large and growing customer bases, that if you offered a somewhat better deal too, they would come flocking.

So, it seems to me those are points to keep in mind, when you start talking about the fact that scale of exploitation of an innovation makes fixed costs in an innovation more attractive.

DR. ROSSTON: Okay, I think that goes -- I take those points really well. In fact, Mike and I had a significant section on the difficulties of contracting in our first report, and the difficulties of contracting for X1 where Time Warner {{ }} where we had contracting for business services with difficulties they've been trying to do a joint venture, and contracting hasn't worked nearly as seamlessly for this.

On your point about competing, I take that very well, as well. Usually, that's in the context of a horizontal merger. This is a geographic extension merger. So, you're not taking out a competitor that's in your same region. You're merging with someone and it's getting the scale from the other region.

So, I think both those points are well taken, but I think that in this case, they don't apply quite as strongly.

DR. EVANS: Yes, you know, sometimes in mergers, they're idiosyncratic and the efficiencies is sufficiently idiosyncratic, that there's nothing more you can do, other than to look at them and say what you can about them.

The thing about this merger is that it seems to me, to be the kind of merger and the kind of efficiencies that are being claimed for this merger, are the kinds that can be subjected to empirical testing.

This seems like the natural area where you have in effect, natural experiments that you have been conducted over the years, that one could look at, in order to figure out who is right on this, because the theory can go in both ways, and we all know that mergers have inefficiencies.

So, the thing that is puzzling here is, I don't want to endorse Joe's customer satisfaction study as rocket science, that's going to get into econometrica, but the thing that's puzzling is that we don't have studies that are making use of the natural experiments that we see over time, with cable consolidation over the years, or studies of Comcast specifically, in terms of cost efficiencies, geographic reach efficiencies, and then ultimately passed through to the consumers.

So, I mean, I hear all this on specific efficiencies. It just doesn't do much for me, because it just seems like there is other stuff we should have before, that we ought to be looking at, that we don't.

DR. GREENSTEIN: Okay, are we ready to move on here or we've got any other additional -- okay.

DR. ISRAEL: Can I answer that?

DR. GREENSTEIN: Okay, last one.

DR. ISRAEL: I mean, we take the point to continue to put things in the record.

I mean, one thing we've done, and we can put it in, I'd encourage the Commission can do themselves, is that a simple thing you can do, and I put a lot of emphasis on speed, as we all have been lately, as a good metric for things getting better, is just look at the relationship between ISP size and speed.

You have the data to do it and we can put some stuff in, if it's helpful, but what we've seen basically is, there is significant positive relationship that larger ISP's have significantly faster broadband speeds.

So, that would be an example we can put more information in on that, but I encourage you guys to look at that too, and the things that we had put in to date were things like business services or R&D expenditures, they're not things you do econometrics on, but we have certainly put in the record, you know, and are continuing to, the set of business service opportunities that combined firm can serve, using their ordinary course rules for how they will serve those businesses.

The fact that Comcast has an R&D budget of $1 billion a year, which is more than the total capital expenditure budget of nearly all cable operations.

DR. EVANS: But that's a tiny R&D and sales ratio. That's minuscule.

DR. ISRAEL: But the R&D has generated things like X1, like home installation --

DR. EVANS: But it's the --

DR. ISRAEL: And other firms don't have --

DR. EVANS: A bigger firm is more innovative. I guess the thing that I find puzzling about that number and did when I first saw it, is that as an R&D sale ratio, **{{ }}**.

DR. ISRAEL: Nevertheless, is true that Comcast has generated substantial R&D innovations that the smaller cable operators have not produced.

DR. GREENSTEIN: All right, let's go. In the interest of time, we're going to keep moving here. Eric Ralph has a couple of questions.

DR. RALPH: So, I'm here to some extent, what my question was centered on, have been discussed quite a bit, so I'm going to try to take some very specific examples and let you think about those.

So, the question I have is, how could the FCC measure the likelihood and impacts of possibly faster and new deployment of innovative products and services over a wider footprint?

Let's just focus on the X1. We've already made the point, and you've discussed a little bit about the issues of licensing, getting licensing from scale and that Comcast ran across some difficulties.

There is another issue that we might want to consider, which is the distinct approach that Time Warner had to video-on-demand and set top boxes, and whether we would lose that, sort of coming a little bit to the benchmark and things.

How would we sit down and measure, take account of those things? In the counter-factual, where the merger does not go through, what is the outcome that we would have and what are the benefits that the merger would bring, compared to that, focusing on X1 for the time being, and we can later go on and talk about all these other things like DOCSIS 3 and IPv6, et cetera.

Let's try to be specific, rather than --

DR. ROSSTON: I think you asked about what the effect would be on X1, of not having the merger.

I haven't thought about this too much, but it seems like with the merger, Comcast is committing to rolling out X1 across the Time Warner footprint, without it, the Time Warner customer would not have access to the X1 box.

They'd still have access to all the other things that I talked about this morning, of ways to get other set top information, but they would not have the ability to get X1, unless there was a contract, and I'm not ruling out that in the absence of a merger, they could contract, but it has been proven difficult so far. It may not happen.

So, you would be taking that benefit away from consumers.

DR. SAPPINGTON: But Greg why wouldn't it happen if it's truly an innovative superior product?

DR. ROSSTON: There have been contracting difficulties and there has been worries by Time Warner about control of its network.

Sometimes you run into questions about how are you going to adapt the network to the future, and having to worry about, you know, you cannot have totally complete forward-looking contracts.

So, that's a concern that seems to be blocking it, otherwise I think we would have seen it already.

DR. SAPPINGTON: Okay, so, it's certainly difficult to predict the future, but that leads me to believe that sort of the impression I'm getting from the other side is that bigger means more innovation, but I think Shane will probably know this empirical literature better than I do, but I don't know of any systematic evidence that says size leads to more innovation, and in particular, at least anecdotally, we think there will be major innovations in recent history.

They're not coming from the big firms. So, Apple, for example, and Google, these grew out of garages. So, I don't understand the idea that bigger necessarily means more innovation.

DR. ISRAEL: Can I comment on that?

DR. GREENSTEIN: Yes, I have to say, I know the literature, but I'm not allowed to have an opinion.

DR. ISRAEL: I do not believe that. I mean, I know the literature and I take the points from before.

I mean, certainly, if the question is just do larger firms, by the size of the firm, innovate more than the literature is certainly mixed.

But that's not the point that we're making here. Right, the point is different. The point is that each of these firms is constrained and has no plans to expand beyond its current cable footprint, right. There is nothing in the record that suggests they're going to expand beyond the current cable footprint.

So, usually the reason that you don't have this strong relationship between size and innovation is what really matters from a size point of view is how many additional subs or customers can I capture with a new innovation, right? How much better can I do?

So, if I'm Apple or Google, I'm small today, but with the great innovation, I have the opportunity to capture customers around the world, right. The issue is that for each of Comcast and Time Warner, the answer to the question of how many customers can I capture with a new set top box or with any new innovation is constrained to my geographic footprint because they found it not cost effective to expand. That investment has been not seen as something that would return itself.

So, on other smaller investments, the

maximum amount they can -- the customers they could possibly capture are constrained to their footprints, right? As soon as you merge them, this is a matter of math, that customer capture possibility increases.

So, it's not the case that we're saying you have to already have the customers in-house in order to innovate, which is the flaw in the usual size innovation relationship. It's that having access to more customers, whatever your probability of capture is, increases the cash flow you can generate on any investment.

DR. SAPPINGTON: I'm not sure exactly how the technology works here, but there is or soon will be evidence on the record that says **{{**

}}, but I don't think we necessarily should focus our attention on the fact that they're never going to compete against each other out of footprint.

DR. ISRAEL: We have a different view of

the documentary record on the OVD's, but leaving that aside.

I mean, obviously things like the ability to provide business services, the ability to link WiFi into a wired broadband network, none of that would be possible if all we're talking about is online competition.

DR. FARRELL: So, on size, I mean, we already raised the issue of licensing as a way to expand the scale over which an innovation is exploited.

In terms of expansion, competitive expansion, there is competitive expansion possible within geographic regions, and I'm not sure why that's getting dismissed, and I also wouldn't want to abandon the idea of some geographic expansion.

I'm not envisioning particularly, that Comcast would decide to do a complete over-build of Time Warner's entire territory, but I do think we have to wonder why when there is a new major apartment complex planned close to the boundary, we haven't seen bidding, we haven't seen offers to expand.

I don't know the answer to that, so I'm simply raising it as a question.

In terms of the set top boxes, it's not an aspect of this transaction that I've studied, but from what I understand, from what other people have been saying, the situation is that Comcast's view has been let's develop our own, and conditional on that, if they acquire more customers, then presumably, they have more incentive to spend more money on it.

Time Warner's view has been let's be part of the customer base for more open or vertically disintegrated innovation system, and as David Sappington is pointing out, you know, that's been a very successful innovation system, and I don't think we should say, oh, the merger will expand the scale on which Comcast, let's invent our own gets developed, and that will be good, without also recognizing that it will take scale away from -- if I'm right on the facts, that it will take scale away from the other system of innovation.

DR. RALPH: That was part of my question, to the extent -- sorry, I should use this microphone.

To the extent that anybody wants to comment of how we might quantify that, I'd be interested in hearing that. Like, you know, maybe the argument -- well, I won't put words in your mouth.

DR. FARRELL: Dick Schmalensee commented on this earlier.

DR. ROSSTON: So, I think that one thing on the set top box issue, this is a complement to the MVPD service. It's not something that is -- it is something that, you have every incentive to make better, if you're the MVPD provider.

DirecTV has an incentive to make the best set top box. Comcast does. DISH does. Everybody has an incentive. This is a complement to this service. It's not a competitor.

So, they have different strategies for doing it, but it is something that they're trying to innovate and they want to do the best they can.

If someone comes up with other things, then presumably it will have an ability to compete with the X1 in multiple different ways.

DR. SAPPINGTON: But the set top box is also the conduit to how the different programmers get to the customers, and so, there is clearly a potential incentive problem there, if you have one major supplier controlling that access.

DR. ROSSTON: The vast majority of programmers who are OVD's now don't go through the set top box.

DR. ISRAEL: **{{**

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DR. RALPH: So, you guys have also talked about a bunch of other innovations that Comcast is a leader in, things like the converged cable access program, you know, moving to DOCSIS 3, the IPv6.

Perhaps I'm not quite sure how to think about it, in terms of innovation, but the VOD library, just the extent of the VOD library, if you want to be a little bit more specific about any of those.

Particularly thinking about it in terms of the alternative that would be in place, if the merger didn't go through. You know, again, it's a very similar type of argument. You could, presumably with the VOD library, there are other ways of getting content and you could either extend your library to, buy some kind of licensing agreement or people will compete to get that content.

DR. TOPPER: I don't know if you want to do DOCSIS and then we can talk about VOD.

DR. ISRAEL: I mean, we've talked a fair bit about sort of the quantification and things on DOCSIS and CCAP and the various ways we're getting more speed, right.

I mean, there are sort of laid out plans where Comcast is ahead, in terms of time and doing that. There's a proven track record, which is what I pointed to as empirical evidence of them being ahead on that at each turn.

I think the economics on that is, you know, basically sort of a learning curve story. They know internally, they've gotten better and faster, as they've rolled them out and they bring that to bear on the next roll out.

So, I think the plans and the economic reasons for them are fairly clear. This is one where I think we can quantify. We can point to the literature that quantifies the value of the speed gaps that you create and what you would get if there was even a one year advance on that.

DR. TOPPER: On the VOD issue, Comcast has -- Comcast has been a leader in VOD. They have a more extensive VOD library than TWC. That's both an aspect of acquiring the programming rights for that, but also building a network infrastructure, and the plan is to move that over to TWC and that's just one dimension of the competition that Comcast has with other MVPD's that it's competing with for subscribers.

We also talk in our declarations about advancing the advertising system, where advertising monetization can be improved, as there's more VOD watching. There is some improvements that improve measurement, that allow dynamic ad insertion. That's something that Comcast has been working on.

There is a whole set of players that are involved in that. There are advertisers. There are programmers, and the folks that are working on this, with more scale, they can accelerate that faster.

That has consumer benefits because if there is better advertising monetization, content providers are willing to make more content available with little or no price increase for consumers.

DR. ROSSTON: You mentioned one thing that presumably the VOD library can be done by contract with TWC.

I'm not sure that's exactly true. I think that there are rights fees that are really difficult to get, so, and that's not based on looking at any contracts.

DR. RALPH: Any comments from this side?

I think we should probably move onto the next question.

DR. ROGERSON: Sure.

DR. RALPH: So, this is to now think about your ability to supply commercial businesses because of the increased national footprint.

One of things we're struggling with is to think about how to measure the size of the gains that arise from serving a larger area, how can we give those a tangible value, and we in doing that, want to account for the fact that we've heard that, you know, you have difficulties with contracting, et cetera.

But on the other hand, it's clear that other people in this business routinely both make build and buy decisions outside their territory. There is a very established market for the buy -- the buy decision, and so, the obvious increment we're interested is the benefit you gain by being there versus what you could do anyway.

So, trying to get a handle on that and you know, one of the things that I noticed when I went through the documents, the internal Comcast documents, is there is very limited information in their assessment of benefits to the mergers, at all to do with this particular aspect, and I just wondered why that might be the case.

DR. ISRAEL: So, I'll take this one. I mean, this is an area that Comcast continues to quantify. I mean, frankly, just honestly, the opportunity and the decision to do the merger happened fairly quickly and the cost savings they came up with were sufficient to convince them that the merger was beneficial.

So, the opportunities on the revenue side continue to be developed. I think that's why more needs to come into the record. Comcast is working on it.

They're working on it. To answer your question about how to quantify, based on sort of ordinary rules, I said they have that are, you know, something like there needs to be a certain percentage of the sites of a business within our footprint before it's profitable to go after.

Now, obviously you're right, that's not 100 percent. So, that means for the other **{{ }}** percent say, there is going to be some building and then if it's well outside our footprint, there is going to be some partnering. So, you're right, that's something that gets used.

It's just the return. The prices, because they're sort of standard issues that arise, an ability to provide service, as well as pricing and margin issues, the ability to make a profitable bid if you get substantially below say, **{{ }}** percent in footprint, just makes it not worth pursuing those.

So, the way I think going about quantifying this thinking about using a rule like that, how many opportunities, what percentage of the dollars spend in a year from, you know, telecom opportunities would be inside the combined footprint, as opposed to for the separate firms?

So, that gives you an estimate of the increased opportunity. You know, Comcast can use internal numbers to think about its own benefits from that, how often do we tend to win? How much more revenue do we think we would make?

So, that's something you can quantify. I think maybe what you're most interested in is what is the tangible benefit to the -- to buyers, right, and so, what we're trying to work on there is at least some examples of sort of what the effects of competition have been, in terms of bringing down prices or other benefits to those business buyers, such that you could take this increase universe that Comcast can bid on, you know, think about how many dollars that is, think about what the benefits are, in terms of reduced prices from increased competition and try to come up with some reasonable quantification.

What I would say, you know, just an order of magnitude, I mean, you're taking about, you know, in the billions of dollars over time, of additional opportunities that are probably available to the combined firm, and so, if you start thinking about quantifying the benefit from that, and there are -- you know, there are examples, when Comcast has bid on certain opportunities where the prices have come down substantially from what the legacy telcos were offering, but even if we're talking about, you know, one or two percent price reductions on billions of dollars of additional opportunities, again, I think that would sort of swamp any of the dollars we were talking about earlier in the day.

So, that's something -- the company is working is still working on those sorts of quantifications. Obviously, more needs to come into the record, but that is something that is at the company, in process.

DR. TOPPER: If I could just expand a little bit on Mark, before turning the microphone over.

There are examples, some are in the trade press, some are based on the experience of Comcast of beginning to be successful within their own footprint, first serving small businesses and then serving multi-location businesses, and seeing big price drops for customers. So, that's one piece of evidence to look at.

What have they been able to do right now? Are they really a competitive force in this industry?

Second, as Mark said, the combined firm is not national. It's not going to serve all the locations of a multi-location business, but it's going to have an expanded footprint and there is some geographic clustering as well, in certain regions that make it more likely that it's going to be able to serve those regional businesses, and I know that business people put together some examples.

These were submitted to the FCC, where prior to the transaction, the -- they were serving in say, the **{{ }}** of the locations, of the business customer.

After the transaction, they **{{ }}**. It becomes a more reasonable competitive alternative to a business, to the incumbent telco option that was there for them before.

DR. RALPH: Before I ask one more

question on this, maybe you guys want to say something.

So, turning to something you just said, it's a stylized fact of this business, and you can choose to disagree with the stylized fact, that the cable guys have done something what you just described. They tended to start with single location businesses, actually often just selling pretty much the same thing they were selling to their residential customers, and they've slowly moved up that tree, and the multi-site, large multi-site business within their territory is the last market they've truly properly entered into, and now, they're beginning to look at multi-regional business.

Is it possible that the difficulty that Comcast has seen here, in thinking about expanding across the country, remembering that there are lots of companies out there that serve these markets, that don't have anywhere near the footprint that even Comcast does.

Is it possible that part of the problem

here is just merely a lack of experience and Comcast's ability to cross regional boundaries and it's something that absent the merger, it would have organically learned, just like everybody else in this business has?

DR. TOPPER: I mean, I think that there certainly would be some of that. This is a new business for them. The multi-location, they're growing and getting better at it.

I would anticipate that over time, some of the challenges of working with partners, with different technologies and billing and ordering systems and different service level agreements and all, you could start to get some of that worked out.

But what the transaction does is helps speed that up, and lets them be a more competitive option for bidding and winning the business sooner.

DR. ROGERSON: Okay, I think looking at the time, I am going to ask my one final question, if that's all right. I'll take the prerogative of the moderator.

DR. ROSSTON: Is that your final

question?

DR. ROGERSON: Yes.

DR. ROSSTON: Or the final question?

DR. ROGERSON: No, the final question, because my plane leaves at 6:35.

So, here is my question. This isn't on efficiencies, but this is an issue that's been raised, and I think it's an interesting issue, really.

Suppose the Commission does accept the applicant's arguments, that this merger is in the public interest, goes ahead and approves it, would the same sorts of arguments that we're hearing here on those -- if they hypothetically approve them, would they support further consolidation among non-overlapping cable operators, and if so, is that an issue we should think about today, when we're considering whether to approve this merger?

So, I'm happy -- I'd like to kind of hear a little back and forth from both sides on this.

DR. EVANS: So, why don't I start with my proposition, which will just be brief.

DR. ROGERSON: Yes.

DR. EVANS: Which is, as I hear the theory from the economists, there are no limiting principles, on the efficiency side it's unlimited, it's the more geographies, the better. The average fixed cost is going to be wonderful. No limiting principles there.

On the harm side, so long as we're acquiring non-overlapping cable systems, so there is no competition that's being eliminated, the proposition I'm hearing from the economist is no overlap, no problem, no limitations on this argument.

So, and I think this argument is important, not just for the FCC, from a policy standpoint. I think this question is important also, for evaluating the economic soundness and plausibility of the arguments being presented by Comcast.

DR. CARLTON: So, I would agree that that's a good question. I think it's a great question. I don't agree with David's answer, but you know, I mean, it goes without saying, every merger, you have to look at the specifics.

I think what we find so far in the evidence is that these theories of harm just don't seem to be there. That doesn't mean they would never be there.

We already talked about some possibilities, how they could be there, that even -- you know, that would fit in to where I would be concerned. Those might arise in the future, in future transactions.

Moreover, the importance of these efficiencies in the scale effects, you'd have to see, do they persist?

I think as people were saying earlier, you know, my general impression of the literature is the results aren't so clear cut, which way size and innovation goes.

So, therefore, when you're evaluating innovation, the effect of innovation on size, it's pretty specific, and I think it would depend on the current technologies and the current plans and capabilities of the firms involved. I don't see how you can abstract from that.

Just to give one example, we were talking about business services. So, let's suppose it is the case that within your region, you have a higher probability of winning your -- so, revealed preference shows that you are more capable, you know, for whatever reason, okay.

Well, that then means as you geographically expand, there is more competition into say, the telcos' areas. But how much more competition?

So, that's a benefit, and I know we've claimed it as a benefit in this transaction, but how many new competitors do you need in business services, before the added benefit is smaller?

So, Mark was suggesting there could be calculations done. We could calibrate what the benefit is in this merger. That doesn't mean it would extend to other mergers, because other mergers now would be on top of creating competition on what already exists.

So, I would -- I don't agree with David. I do agree it's a good question, and I think the answer is, it doesn't bind you. You should look at each merger separately.

The only other thing I would say about this option value, about future mergers, which I mean, Mike has -- Whinston has some papers on this, and you know, my own view is that from a policy perspective, figuring out the option value of not allowing one merger that would be in the public interest because by not allowing that merger, you create the incentive for other mergers in the future, that's a very hard calculation to do, and I would suggest that that's probably not a good policy direction.

DR. ROGERSON: Okay, David Sappington. I'm going to give all three of you and if -- look, all four of you want to -- all four of you a chance to comment on this, okay? So, go back and forth. David?

DR. SAPPINGTON: I'll try to be quick. I think we all agree that there is one -- on one issue, at least, that the question is an excellent one.

But I do disagree with Dennis on his suggestion that when we look at the record, that theories of harm are not there.

I do think there is a clear theory of harm there, and in fact, it's the issue that we have these large suppliers of access to OVD's. We're going to let some of these suppliers merge, limiting the ability of OVD's to cobble together, enough access, in order to make their business viable.

So, I think we have a serious potential problem here where we're considering a merger that will increase the incentive and the ability of the parties involved, to sabotage their competitors.

DR. ROGERSON: Okay.

DR. TOPPER: So, I'll talk a moment about the analysis that Greg and I have done, and really, this idea that there is no limiting principle.

As I think about the analysis we've done, the absence of overlap in retail markets is certainly an important piece of our competitive analysis, but it's far from the only thing that we've done, and if you think about the analyses that we've done, that we talk about in the panel three on programming, we account for this specific merger and say, the options that are available to programmers for making their program available, the open field.

The fact that there are other large areas of the country where Comcast and TWC, the combined company won't operate. When we think about program carriage, program buying, same thing.

So, on the competition issues, there is definitely a limiting principle -- we're accounting for not some merger -- of all non-overlapping cable, but this particular merger including taking into account the divestitures, et cetera.

On the efficiency side, the efficiencies that we've been looking at, that Greg and I and Mark have been talking about are also not just general about bigger scale, but specific things, if you think about where Comcast and TWC are today, and what they would be able to get to with the transaction, and the business services that we've just been talking about is a good example of that.

So, our analysis that we've done really is focused on this transaction and in the future, I think one would have to look at what are the market facts? How has the whole competitive ecosystem of what's going on in these industries evolved.

So, we're asking -- our analysis is asking a narrower question, and there is definitely a limiting principle.

DR. ROGERSON: Okay, Joseph Farrell.

DR. FARRELL: Let's see. Well, I agree it's an interesting question. I don't agree the theory of harm is not there. I think the theory of harm that I have in mind is the same as David was suggesting.

There is a likely accretion of ability to exercise terminating access power, maybe more ability to exercise than presence of power, but one way or another, that's likely to confer both the power to charge terminating access fees and power to sabotage.

To some extent, those are sort of alternative strategies, because if you can charge really high access fees, you may not want to sabotage.

But one or both, and you know, that leads to a situation where you have dominant incumbents able to essentially tax purchases from their rivals, and I think even without getting into a precise cost benefit analysis, that is very much something to be avoided.

DR. ROGERSON: Okay, and Mark, your time, you get the last word.

DR. ISRAEL: Well, I'd better say it was an interesting question.

No, it is, and I mean, look, we've gone a lot back and forth through the theories of harm and the theories of benefits from the transaction today. I mean, I think, you know, in a nutshell, what we're saying about -- what I'm saying about this transaction is, while there are certainly theories that could be advanced, we think on the -- you know, on the merits, those theories don't really stand up to scrutiny, but much more importantly, we think that if you analyze what we're talking about all in, it's not very much money and the evidence of any market power behavior by very large -- Comcast today was alleged to have a lot of market power.

The evidence of any restraining effect on OVD's or competition in that space is lacking, given what Comcast is doing, and we think the benefits clearly outweigh any harm that might come from that.

So, that said, to your question, like we always have to do in these transactions, we take the facts in front of us and we try to make a prediction about this transaction, and that's hard enough.

I don't want to predict two or three years in the future, but I think we would make a prediction about this transaction, based on the facts in front of you, you're going to -- and we had a very good debate today, you're going to have to weigh those facts, right?

After they make a decision on the basis of those facts, I assume if there were another transaction like this, the single most important piece of evidence would be what you learned from this one, right?

So, I think the limiting principle is, you evaluate what the facts are on the table about this transaction, that we've all laid out. You decide on balance, which way they go. Doesn't tie your hands any way in the future. You make the best prediction you can. You hope there is a 55 percent chance that you're -- I mean, you do the best you can and then you learn from the best decision that you can make today.

So, I think it's hard enough to do this one. We do what we can with this one, and the way science works, we would learn and just -- and that would improve what we understood for any future ones.

DR. ROGERSON: Okay, well, I think we

really have had a very good debate. I'd like to thank all of the panelists, and thank all the audience too, for so patiently putting up with all this economics, and thank you very much to everyone.

(Whereupon, the above-entitled matter went off the record at 4:39 p.m.)

C E R T I F I C A T E

This is to certify that the foregoing transcript

In the matter of: Proposed Comcast-Time Warner Cable-Charter Transaction Econ. Analysis

Before: Federal Communications Commission

Date: 01-30-15

Place: Washington, DC

was duly recorded and accurately transcribed under my direction; further, that said transcript is a true and accurate record of the proceedings.

Neal R Gross

Court Reporter